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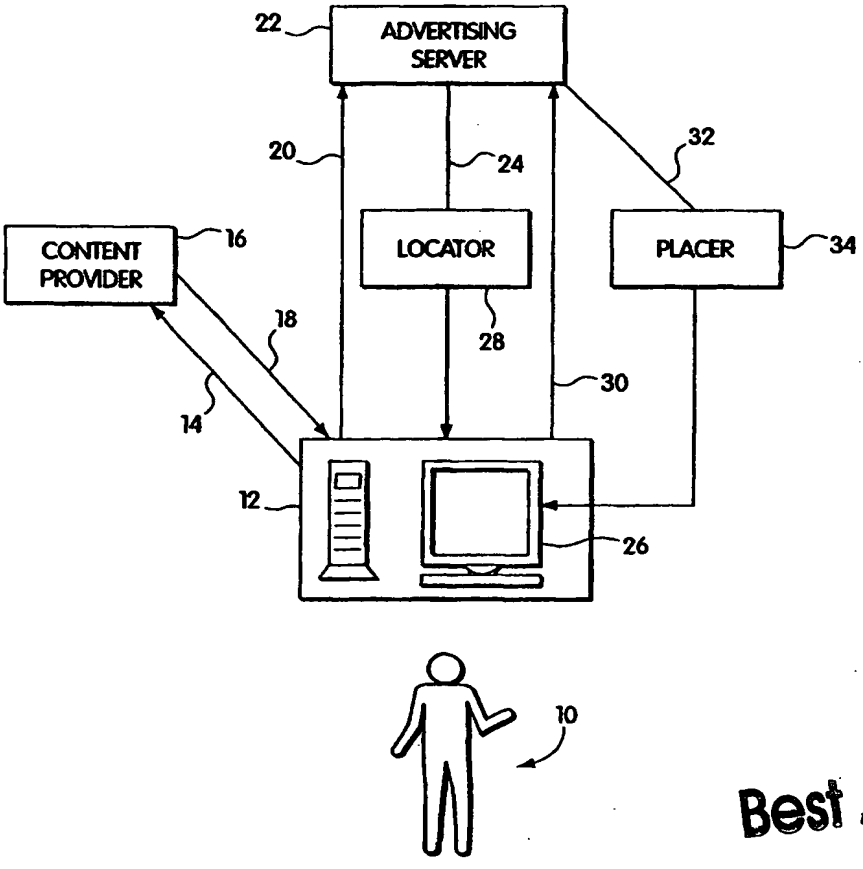
(54) Title: METHOD OF DELIVERING INFORMATION OVER A NETWORK



(57) Abstract: Methods and apparatuses are disclosed for the display of material over a network such as the Internet. The method allows for multiple displays to be placed on a physical display device such as a computer monitor in such a manner as to positionally reference the later displays to the earlier displays allowing multiple displays to be presented in a manner pleasing to the user. A method is also disclosed for providing a set of displays to a user without that user having to leave the content they were viewing. Finally, a method of targeting advertising to users is disclosed using a transmission profile where the transmission characteristics of the user are recorded and used to determine the display to deliver.

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Method of Delivering Information over a Network

Background of The Invention

1. Field of the Invention

This application relates to the field of delivery of material over a network and more particularly to the field of progressively imparting information in a set of different displays to a user in a logical and interrelated pattern over a network.

While the invention has been disclosed in connection with the preferred embodiments shown and described in detail, various modifications and improvements thereon will become readily apparent to those skilled in the art. Accordingly, the spirit and scope of the present invention is to be limited only by the following claims.

2. Description of Related Art

The Internet and other networks are an area where the presentation of information to a user who has not specifically come looking for your information can be difficult. The situation is most noticeable in advertising where advertisers present information across the World Wide Web on webpages where users have come in search of material not offered by the advertiser. In order to get those individuals to provide useful personal information about themselves, and to get them to request additional information about a product, the advertiser needs to be able to entice them to access that additional information.

Traditionally, this was done through the presentation of a clickable advertising banner. This banner was presented on a page the user had accessed for the content provided and when clicked enabled the user to be transferred to the advertiser's website where the user had access to the advertiser's information. The problem with this system is that it required the user to leave the content site they had selected to visit the advertiser, or it required opening a new version of their web browser in order to contain the advertising website. The former of these could make it difficult or time consuming for the user to return to the website they had originally been viewing and the latter could tax a user's resources by requiring numerous open browser windows.

A solution was needed where additional advertising information could be presented without having to have the user leave the content site they were viewing. In addition, it was

necessary to be able to present advertising information so that additional information could be added when a user clicked on an advertisement, without having to forward the user to the advertiser's website. Finally, it was desired to place additional advertising information positionally referenced to previous information so that the composite advertisement has an appealing look and can better entice the user to the advertiser's product, service, or website.

Summary Of The Invention

Accordingly, it is a first object of this invention to allow presentation of multiple advertising displays to a user over a web browser without requiring them to leave the page they are viewing. It is a further object of this invention to be able to provide a set of advertising to a user over a network where an individual advertising display is positionally referenced to prior advertising displays that have been presented to a user. It is a third object of this invention to provide composite advertisements that have an appealing look and better entice the viewer to request additional information about the advertiser's product, service or website.

These and other objects of the invention are achieved by a method for displaying advertising on a network comprising: a user with a client coupled to a network, where the client provides requests for material on the network. The client also contains a physical display device (such as a computer monitor) for displaying material, and further provides a process for registering a user response. A content provider has a page responsive to these requests for material and further provides requests for components. A server has sets consisting of multiple component displays which are responsive to these requests for components. The sets may be displayed on the physical display device, with a locator locating the actual placement of the component displays. When a user response occurs, a designator designates an additional component display from the chosen set, and a placer places the additional component display positionally referenced to the initial component display based on the location provided by the locator.

The method above can be used for a wide variety of material transfers. The set of material may be a set of visual or audiovisual displays, or the execution of software and the presentation of material, optionally contained in databases. Selection of material by the designator may be based on a variety of algorithms. Such algorithms may automatically

determine the selection of downloaded material, by using stored and current information about the intended user, and by comparing this with stored information about the material available for transfer. The invention may also optionally adapt to the effective system communication speed to assist in selecting the appropriate material to be transferred.

Particular use of the invented system may be made for Internet advertising where a set of downloaded advertising displays from one or more servers may be used to present commercial material to one or more users, optionally with the content, size and/or presentation style of downloaded material being chosen to match information known or assumed about the user. In such an application the component material is the advertising material the advertiser desires to present. Commercial fees may be charged for successful presentation of material to users, optionally with further fees being charged for successive stages of advertising display presentation. Additional fees may be charged if the algorithms and data provide material achieving a better than random match with user requirements or preferences, and/or achieving better than random commercial or other results. Autonomous agents provide particularly advantageous means for matching the applicability of downloadable material with users, on a mathematical, algorithmic or monetary basis, and optionally competing to download this, with selection being made from the best match valuation, which may also serve as the basis for charging fees. Similar agent based schemes may be applied to include selecting news, questionnaires, and other material as an advertising display if the users' have propensity to value this. Information gained from Internet advertising and the user's response to presented material may be used to initiate Internet commerce, for which additional fees may be charged, particularly if a commercial transaction results. Such Internet commerce may be conducted directly from the advertising source or may be delegated to a different computer source within the invented system or part thereof, and may be recorded for reporting and billing. Security provisions may be included to check system operation as designed, and to preclude misuse of the invented features. The invention also provides that information may be proactively learned about Internet access points by cumulatively and repetitively investigating all such connections and storing information gained thereby, for association with users interconnected thereby.

Brief Description Of Drawings

Figure 1 is a diagram explaining the first embodiment of the invention.

Figure 2 is a montage of the user displays in one embodiment of the invention.

Figure 3 is a montage of the user displays in a second embodiment of the invention.

Figure 4 is a flowchart describing the method of the invention.

Figure 5 is a Schematic of Initial Applet lifecycle.

Figure 6 is a Schematic of a three server configuration.

Figure 7 is a schematic of a single server configuration.

Figure 8 is a schematic of a cooperating server configuration.

Figure 9 is a schematic of a multiple user multiple server configuration.

Figure 10 is a diagram explaining an alternate embodiment of the invention.

Figure 11 is a diagram explaining a further embodiment of the invention.

Detailed Description of the Preferred Embodiment(s)

Various terms used in this document have the following meanings.

'User' generally denotes a human being using a device, such as one allowing access to a network. This is typically a computer having a keyboard, optionally a mouse device, a physical display device, optionally an audio display device which is typically speakers or earphones, with the computer running software able to display computer-originated material typically received from one or more separate computers. Preferably the user's computer is running browser software enabling it to act as a client and communicate by the Internet to one or more servers.

'Browser' generally denotes a software package that provides the functionality of a client, such that it interconnects by a network to one or more servers.

'Client' generally denotes a computer or similar device executing browser software that interconnects by a network with one or more servers.

'Server' generally denotes one or more computers or similar devices that interconnect by a network with clients and that have application programs running therein, such as for the purpose of transferring computer software, data, audio, graphic and/or other similar material.

'Content server' generally denotes a server whose purpose is to provide downloaded material of real or potential use or interest to users, such that a user will typically make contact with the content server for the purpose of accessing this material, or alternately this term may denote any server that is accessed by its URL and then downloads HTML to the user's client.

'Integrated server' generally denotes a server that provides all or a substantial part of the current invention. In particular it is capable of providing the functions of advertising server and/or commerce server while also providing the mechanism for operating and tracking use of the inventions, typically on behalf of owners or administrators of the inventions or part thereof.

'Advertising server' generally denotes a server having access to advertising displays in advertising sets, typically in an accessible database, with the capability of downloading all or part of this material to one or more users by utilizing one or more the present inventions.

'Material' generally denotes computer data, graphics files, audio files, audiovisual material, video data, computer software or other material generated during the execution of software, such as from a server or other computer, which may be communicated to one or more users or other computer users and may be displayed such as by presentation on one or more visual and/or audio display devices. Material is provided by the content server, as well as making up the component displays.

'Component display' generally denotes any display requested by a content provider which is not the content of their site, but is displayed with the content of the content provider's site. This includes advertising displays, as well as any other type of material.

'Advertising display' generally denotes a presentation of material which has an at least partial content or component with advertising purpose or connotation. It may include, but is not limited to, solicitation, advertising, public relations or related material, news material, non-profit information, material designed to promote interest in a product or service, information enabling a user to search or view other content providers, or other material that might be of interest to the user.

'Advertising set' generally denotes a group of advertising displays that have been arranged together for a reason. An advertising set can be strictly stored, adaptively changed, or dynamically defined in response to other information.

'Advertiser' generally denotes an organization or entity that wishes to, or actually engages in providing advertising material to one or more users by utilizing one or more elements of the present invention. An advertiser need not be a profit seeking entity.

'Advertising agent' generally denotes a software autonomous agent representing one or more advertisers and executing within a device connected to the network, typically a server such as an advertising server. This software's function is to compare information about a user such as represented in a user profile with information relating the applicability of one or more advertising sets or advertising displays to users, and to thereby calculate a 'figure of merit' or 'goodness of match' score for more than one combination of a user with the advertising material. This software, or other software operating in cooperation with it, then employs some criteria to select the best such match as a basis for choosing the preferred advertising display to be presented to the user.

'Commerce server' generally denotes a server whose function includes communicating with users for the purpose of achieving a commercial transaction, such as purchase of a product. Both cases are implicitly included of both commerce servers than can set up and conclude a commercial transaction automatically without explicit human assistance, and also commerce servers that identify the product or products and set up a transaction but require human intervention to complete the transaction.

'Display' generally denotes the process of presenting material to a user on a visual display device optionally in combination with an audio display device, and may alternately denote the device or combination of devices in use.

'User profile' generally denotes one or more items of information from any source relating to an individual user or user class, with such information collected together on some basis.

'Material profile' generally denotes one or more items of information about material or some element or attribute thereof, which relates to the applicability of said material to one or more users or user classes such as contained in user profiles, with such information optionally arranged in a consistent manner.

'User class' generally denotes a set of real or hypothetical users grouped together in some way relating to a commonality of some aspect or attribute.

'User profiling , generally denotes a process for obtaining information about a user from one or more sources, optionally storing this information in some manner.

'Transmission profiling' generally denotes a process whereby a device connected to the network measures one or more aspects of a communication rate between itself and another device connected to the network, such as between a client and a server.

'ISP crawling' generally denotes a process whereby a device connected to the network may access one or more other devices functioning as an Internet Service Provider (ISP), and may use information obtained thereby to provide information about clients that connect to the Internet through such ISPs.

'Applet' generally denotes computer software written in the Java language and prepared in the correct format such as to be able to be downloaded from a server to a browser in accordance with the conventions pertaining to Applets.

'Java code' generally denotes computer software written in the Java language, for the particular purposes of being executed in a Web browser and being prepared either as an Applet or in some other format.

'Physical display device' denotes an LCD or CRT screen where visual information can be displayed. It can however be any device allowing a user to comprehend a visual display including but not limited to, a screen, a paper printer, or a projection device. It may also, optionally, include a device for presenting audio information.

As a preferred embodiment of the subject invention, the following descriptions and examples are discussed primarily in terms of the method executing over the World Wide Web utilizing Internet Java software executing within a browser and C++ software executing in a server. Alternatively, the present invention may be implemented by ActiveX , C++, other custom software schemes, telecommunications and database designs, or any of the previous in any combination. In a preferred embodiment, the invention and its various aspects apply typically to the user of a personal computer equipped with visual graphic display, keyboard mouse and optionally audio speakers, equipped with browser software and functioning as an Internet World Wide Web client. However, alternative embodiments will occur to those skilled in the art, and all such alternate implementations are included in the invention as described herein.

Referring to Figure 1, a basic embodiment of the invention is laid out. The user (10) accesses their client (12) which sends a request for material (14) to a content provider (16). Upon receiving the request for material (14) the content provider (16) sends back material (18) which includes a request for advertising(20). The advertising server (22) receives the request for advertising (20) and sends an initial advertisement (24) to the user's client (12). The user's client then places the material (18) and the advertisement (24) on the physical display device (26) where it can be seen by the user (10). A locator (28) locates the placement of the advertisement (24) on the physical display device (26). At some time later the client sends a user response (30). When the advertising server receives the user response (30) a new advertisement (32) is selected by the advertising server, a placer(34) then receives the new advertisement(32) and places it positionally referenced on the user's physical display device (26) based on the location provided by the locator(28).

Referring now to Figure 2 the process can be seen from the user's point of view. The user initially sees Figure 2a where the user is looking at physical display device (26) which is displaying material (18) and the initial display (24). When the user response (not pictured) occurs, the screen changes to that of figure 2b where the initial display (24) is replaced by an additional display (32). Subsequent additional displays (36) can then be presented as in Figure 2c allowing an essentially endless presentation of positionally referenced advertising displays. A particular feature of the present invention is that the later displays can constitute a window or banner not fully utilizing the full dimensions of the physical display device (26) or

browser window. They can also be positionally referenced by a placer (34) to an initial or earlier display, even if this was generated by different software executing in a different computer.

The initial display (24) and all later displays may be visually alphanumeric, graphical or mixed, may be visually static or dynamic or formed of continuous video images, may feature 3D rendering, and may comprise audio components. Any later display may be positioned either such that all or part of any previous display is still visible, or such that any or all preceding displays are hidden, either because they are first deleted or cleared or because they are overlaid or masked by the later display.

In one embodiment, one or more later displays may be larger than one or more earlier displays, which may optionally be used to create a sense of growth in the display sequence. Referring again to figure 2, in figure 2a the user sees an initial display (24) within the material (18) presented on his/her physical display device (26). In figure 2b a user response (not pictured) has triggered an additional display (32) which covers the initial display (24). The additional display (32) looks like a window expansion of the initial display (24). A further user's response (not pictured) takes the screen to the look of figure 2c where a subsequent additional display (36) has covered all previous displays (that is the initial display (24) and the additional display (32)) giving a further illusion of growth.

In another alternate embodiment, one or more subsequent displays may be positioned such as to partly or completely coexist with one or more earlier displays, such that optionally the totality of presented information content increases with each later display. This is illustrated in figure 3. Figure 3a shows the initial user's view with the initial display (24) in the material (18) as it is presented on the physical display device (26). After a user response (not pictured) the user sees figure 3b where the initial display (24) is joined on the physical display device (26) by the additional display (32). After another user response the user sees figure 3c where the two displays currently present (the initial display (24) and the additional display (32)) are joined by a subsequent additional display (36) resulting in a composite display. One or more of the later displays may placed at a relative offset from one or more earlier displays, and one or more may be centered on the display device.

It should be noted that the examples above show a total of three different displays being presented to the user. That number is by no means determinative and any number of displays can be used, each additional display being positionally referenced to any or all prior displays. Additionally, the set of displays in figures 2 and 3 represent two possible patterns but the types of presentation is by no means limited to those patterns. All other patterns where additional displays are positionally referenced are included within the scope of this invention. This includes but is not limited to a series of such displays arranged such that each is larger than and covers the previous one, to thereby impart a sense of progressive growth, a combination of displays used to progressively tile together and form a composite display giving a static or dynamic sense of growth, where the initial display may form part of the composite display, may coexist with the composite display, may be partly or completely overlaid by the composite display, or may be removed before or during formation of the composite display.

Figure 4 shows a flowchart of the operations carried out by the general method of this invention. First the client provides a request for material (114), then the content provider provides a request for components (120). The server then selects a set and a component for the content provider (122). The content and component are merged and the finished page is sent to the user (118), who can now see the component and material (126). The Locator records the location of the component (128). There is now a question of whether a user response occurs (130). If there is no user response the user continues to examine the component and content. If a user response does occur, the designator selects a component from the set (132) and the placer places that component positionally referenced to the old component for the user (134) who can again see the component and the material (126)

As a preferred embodiment, this embodiment of the invention may be implemented by the download from an Internet Sever and the execution in an Internet browser of one or more Applets and/or other Java code modules which build a sequence of advertising displays, based on both their own execution and/or the use of material downloaded from one or more Internet browsers, in any combination.

Advertising displays of the type mentioned in this invention on a browser have previously been confined to an initial display window or banner defined by the content

provider, generally through HTML interpretation, and are initiated with no knowledge on the advertising server's part of the window position of the display window or banner within the content provider's window.

The present invention provides that a locator can make a runtime determination of the inherited display window coordinates, and can then use this information to correctly calculate absolute screen coordinates for later displays, such that these later displays may be positionally referenced with the actual coordinates of the inherited initial banner or window. A placer performs the action of getting the later advertising displays to the user's physical display device and placing the later advertising displays in a positionally referenced location. This provides that the initial inherited display, with its actual window size and positioning, may be utilized as part of a subsequent sequence of displays, such that the entire sequence is positionally consistent.

As a preferred embodiment, the locator of the invention may be implemented by an Applet or other Java code executing within a browser making a run-time procedure call to the browser to determine the coordinates of the inherited display window, then making use of the returned data to learn the absolute position of the initial inherited window or banner, and thereafter using this information to define the position of later advertising displays such that their position can be guaranteed with respect to the initial inherited window irrespective of where this was found to have been positioned.

The following paragraphs show a preferred embodiment of implementing the method of this invention. This implementation should be taken as illustrative and should not be taken to limit the scope of any of the claims herein.

In a preferred embodiment of the current invention a local user operates a browser on the client comprising a physical display device. First initial Java Applet is invoked by the user browser's interpretation of an HTML page presented by a server. During the browser's interpretation of the downloaded HTML code with which to build the display of a downloaded Web Page, the client browser encounters an embedded reference to invoke the Applet. This causes the browser to download the invoked Applet, from either the same or a different server, and to then initiate its execution. The Applet then executes its programmed

functionality and may thereby present one or more advertising displays, may perform calculations and computations, and may cause subsequent Applets or Java code to be downloaded and executed, which may present further advertising displays, as described above. In particular, the selection of a set of advertising displays may be caused by the execution of one or a series of downloaded Applets or Java code modules, and/or by the download of one or a series of graphic or other files, with the sequence initiated by the original HTML reference to the initial Applet.

In such a sequence any downloaded executable code or other file may be varied, either to change the advertising display to be presented on the user's physical display device, to change the computations performed during the code's execution, to change the selection of subsequent downloaded code, to change selection of the server from which the subsequent code is to be downloaded, or any combination. The series of code modules to be downloaded, and/or the rules for determining the nature of such series, may be stored either within the currently executing downloaded code, or on the original server, or on a different server accessed by executing code.

Advantageously, such code and graphics files and the sequences for downloading them are stored in databases on one or more servers. Said download sequences may be followed in an invariant manner, or the sequence selection may be made on the basis of algorithms and data. This may be accomplished wholly or partly based on the characteristics of the user. Alternatively, the download sequences may be dynamically and/or adaptively varied based on information such as the user's noted response to a prior advertising display and/or on the execution of downloaded code. In general, downloaded executable code comprises various types of Java code, of which the initial download is formatted as a Java Applet, and subsequent downloads may be Applets, custom class files or non-Applet Java code.

This element of the invention may be implemented by a server being set up with an HTML Page having a reference to a Java Applet located on the same or a different server. Following download and during execution of said Applet, one or more advertising displays are presented to the user, by the execution of the first Applet and optionally by execution of other subsequent Java code modules, optionally with the download of one or graphic or other

files from one or more Web servers. This element may also be implemented by Internet servers containing the executable code and advertising sets of files to be downloaded, together with representations of the download sequences and rules and/or data for deciding the selection of such sequences and/or defining modified or new sequences, all provided to one or more servers in one or more databases.

Figure 5 depicts an example of the implementation of the method utilizing Applets and depicted over the Internet. The transaction occurs between a client browser and at least two servers. This example is as an understanding aid only and is not in any way meant to limit the claims.

Initially the browser (200) is browsing (202) a first web server depicted as 'www.website.com' (204) which may be a content site. This serves up HTML to the browser (206). At some point an HTML page contains a reference to an Applet on a second server (207). The browser then requests this Applet depicted as 'Appletl.class' (208) which is served up in response (210). When this Applet commences execution in the browser, it requests a property list (212) and is served a property list (214). The Applet also requests an introductory image (216) and is served an introductory image (218) which will be displayed to the user. The executing Applet then requests the second Applet 'Applet2.class' (220) which is served to the browser (222). Applet2 then commences execution and requests its property list (224) and is served its property list (226). It then requests one or more graphic images (228) which are served and displayed to the user (230). In this case, the sequence culminates in a commercial transaction with an Order Processor (232) which may be either conducted with a further commerce server or the functions may be combined together in an integrated server. The commercial transaction consisting of an order submission (234) by the user and a confirmation of the order (236) from the order processor (232).

The following are intended to be illustrative depictions of some of the types of networks covered by the invention. They should not be taken to limit the scope of the claims and are intended to provide examples.

The first embodiment of the invention is depicted in figure 6. In this case there is a user (310) with a client (312) with a browser (314) and a physical display device (316). The

client (312) is connected to the network (318). Also connected to the network (318) is a content server (320), an advertising server (322), and a commerce server (324) each of these servers having configurations, functions and capabilities as previously described. The configuration described in this example covers a commercial usage of the present invention.

The content server (320) is accessed by the user (310) while in search of interesting or informative content, or for any other purpose supported by the network. The content server (320) may be a news service server, a search server, an entertainment server or other server accessed by the client as part of a network based activity. During this access of the content server (320), material is downloaded to the user (310), such as typically HTML code and/or graphics files for display. Included in the HTML code is a reference to a Java Applet available for download from the advertising server (322). The advertising server (322) has advertising displays in advertising sets for download to a client (312). The advertising material within these displays may be provided by the owners of the advertising server (322), or may be provided by one or more other advertisers on a commercial basis. Upon encountering HTML reference, the client (312) accesses the advertising server (322) and downloads code for Java Applet. During execution, this Java Applet visually displays one or more items of visual information on the physical display device (316), as described above. Following the initial advertising display, the additional advertising displays may be initiated by any user response from user (310) including a mouse action, a keyboard action, or the passage of time. The selection of which additional advertising displays should follow the initial display is based on one or more algorithms within the Java Applet, or in one or more algorithms residing in the advertising server (322).

In particular, one or more targeting algorithms may be used, which select material including advertising to be downloaded to the client (312) for presentation on the physical display device. This targeting may be based on stored information about the user (310) or the user's (310) profile, the user's (310) previously determined propensity to respond to certain types of advertising material, the rapidity with which the user (310) responds to certain types of material, transmission profiling of the effective communications speed between client (312) and the advertising server (322), and/or the user's (310) monitored propensity to favor short/simple or long/richer types of downloaded material in any combination. The advertising server (322) may constrain all downloading traffic to a given user (310) during a

given session to be selected from a defined area of downloadable data. This may be selected depending on the identity of the content server (320) from which the original reference occurred, on information about the user (310) or on the user's past or current actions, or other relevant criteria. Alternately, additional advertising displays or parts of additional advertising displays may be taken from some other area, in accordance with one or more algorithms for making this transition, such as that it is calculated that the user (310) may be more productively supplied with information from such an alternative area. This selection may be based on factors including the preference of different advertisers to access certain users or user types in different circumstances.

The selection of which area is used to provide advertising displays for a given user may be made upon first access by the user (310) in response to the initial Applet reference, or may be changed by the designator depending upon the user's current response or action. This change may be made based upon predetermined algorithms or rules defining the material areas to which users should be connected, such as areas containing content provided by different advertisers. Alternately, the selection may be made dynamically by software agents representing the advertisers' preferences and valuations placed on users, which may bid on a user (310) identified as accessing the advertising server (322), and the preferred bid is automatically selected such that the winning advertiser is allowed to download to the instant user.

The advertising server (322) embodies means to keep a complete record of all 'hits' representing each instance of a discrete download of a Java Applet graphics file or other information, to each client (312) whose user (310) has accessed the advertising server (322), and/or each response made by each user to such information. This record may be dynamically or periodically sorted by actual user or user type, by downloaded material or material type, by originating advertiser, by statistical means or by any other parameter or combination of parameters. This record may be used as the basis for usage reports, optionally after sorting as above or by similar or other means. This recorded and/or reported information may be used as a basis for commercially billing advertisers, based on the number of downloads of material, the response of users, success in leading to subsequent contact with one or more commerce servers (324) and success in leading to a subsequent commercial transaction.

The commerce server (324) contains the ability to transact commercial transactions using the network. Interaction between the user's client (312) and the advertising server (322) optionally may lead to a user action, or progression in the series of information downloads, that cause the user (310) to be placed in contact with the commerce server (324), with the possibility that a commercial transaction, such as a product sale, may then be initiated. The commerce server (324) may keep a record of all interactions with users, including when a transaction occurs immediately or later. These records of interactions and transactions may later be used for billing purposes, whereafter advertisers may make payments for actions of the advertising server (322) that lead to contact with the commerce server (324) and/or actual commercial transactions.

Although this example is simply depicted with a single user (310) with a single client (312), a single content server (320), a single advertising server (322), and a single commerce server (324), other combinations are possible. A plurality of users may access a plurality of content servers, each of which may reference a plurality of advertising servers each containing material from a plurality of advertisers, which may direct users to contact a plurality of commerce servers. Although only the simplest combination is described, all such combinations are implicitly covered by the present invention.

A further embodiment of the invention is depicted in Figure 7. This shows the method of the invention operating through the Internet with a single user and a Single server. The computer is acting as a client (312) with browser (314), which includes a physical display device (316) viewed by user (310). The client (312) is connected through the network (318) to a server (330). The server is a computer having access to data storage (332), either internally or externally, which includes a Database. The client uses Microsoft's Internet Explorer running under Windows 98 on an Intel architecture personal computer. The server uses Microsoft's NT server running under Windows NT together with custom software developed for this Application.

During operation, the user (310) utilizes the client (312) to contact the server (330) and download HTML information, which the browser interprets and uses to format visual information and present this on the physical display device (316). The HTML information contains a reference to a Java Applet. The browser downloads the Applet from the server

(330) as Java code, which it then executes. Execution of the Java code causes an advertising display to be presented to the user (310) on the physical display device (316) using visual and/or audio displays. Continuing execution of the Java code causes one or more additional advertising displays to be similarly presented. Alternately, execution of the Java code may cause a subsequent Applet or other Java code to be downloaded from the server (330) and then executed on the client (312). During execution of the subsequent code, a further Applet or Java code may be invoked in turn. Thus, a sequence of Applets and/or Java code modules may be invoked and executed in turn, where each of the sequence may present one or more visual, audio or audiovisual advertising displays on the physical display device (316).

The server (330) contains algorithms to determine the individual identity and sequence of Applets and Java code to be downloaded to a particular client (310). One type of such algorithm uses a stored user profile to determine which code module should be downloaded. An alternate algorithm uses a mixture of stored profile data and current user data to determine this selection. An alternate algorithm bases the selection at least in part on transmission profiling, which uses measures of the user's communication speed with the server for material selection.

Another embodiment of the present invention is illustrated in Figure 8. This shows a computer acting as a client(312) with a browser (314) and including a physical display device (316) viewed by a user (310). The client is connected through the network (318) to a first server (350). The first server (350) is a computer having access to data storage (352), either internally or externally, which includes a Database and able to execute all the functions of the server as described above.

The configuration described by Figure 8 has the additional aspect of cooperative operation, in that there is a second server (354) and a third server (356) that are also available to download information to the browser (314). The first server (350), second server (354), and/or third server (356) may all contain the same algorithms, user information and downloadable information. Alternately, they may contain differing information from different sources or intended for different types of user (310), or they may contain distributed Information of several classes intended for several user types. The function of the router (358) is to direct incoming messages from the client (310) to an appropriate server (either

first server (350), second server (354) or third server (356). This may optionally depend on the information that is to be accessed and/or the extent to which the available servers are currently utilized and available. There may be more or less than three servers connected through router (358), the number is provided purely for example.

A further embodiment of the present invention is shown in Figure 9. In this case there are multiple users (410) with multiple clients (412), connected by the network (318) to a number of servers (430), each with functions and capabilities as previously described. The network (318) permits an indefinitely large number of clients (410) to be connected to the system, optionally located any where in the world that network (318) access is available. Similarly, the servers (430) may be located anywhere that there is network (318) access. This configuration permits even greater operational flexibility.

In the most preferred embodiment The user's original Applet reference may be picked up by his client referencing HTML code from any server. This reference may point to an initial executable Java Applet downloaded from any server. Execution of this Applet may cause data to be accessed from any other server, or a may cause a subsequent executable Applet or other Java code to be downloaded from any other server. Additionally, an indefinite number of users with clients may access the system as previously described. Individual users may optionally commence and cease such access at any time, such that the population of such active users connected to servers implementing the present invention at any time is dynamic and may be non-deterministic.

The invention also provides that a single server may provide all or most of the functions of the present invention.

One example of an integrated server is a server that contains the function of an advertising server as previously described, and may directly manage the charging of fees and commissions for advertising services and also stores one or more Applets that are initially referenced in an HTML page and will download these when a client's browser so requests. The integrated server then provides sequential displays to the user as described above. Thus a single server, or a set of cooperating servers interconnected with a router, combines the functions of primary implementation and administration of the material display components

of the subject invention, and also represents participating advertisers by storing their material and material profile data, optionally hosting their advertising agent software, and optionally maintaining records to bill them for services performed.

An alternate example of an integrated server also embodies the function of a commerce server. Thus, the entire process of downloading the initial Applet, effecting the display of downloaded material, optionally performing some measure of advertising, proceeding to a commercial transaction such as product sale, and then keeping records to record the sale and charge fees and commissions accordingly, may all be performed by a single integrated server.

The invention provides that one server communicating with a user's browser may optionally redirect the user to another server. For example, this will allow an initial server to redirect the user to an advertising server or commerce server, or an advertising server may redirect the user to a different advertising server such as representing a different advertiser, or a commerce server.

This is depicted in figure 10 and is similar to the basic method. The user (10) accesses their client (12) which sends a request for material (14) to a content provider (16). Upon receiving the request for material (14) the content provider (16) sends back material (18) which includes a request for advertising(20). The advertising server (22) receives the request for advertising (20) and sends an initial advertisement (24) to the user's client (12). The user's client then places the material (18) and the advertisement (24) on the physical display device (26) where it can be seen by the user (10). A locator (28), then locates the placement of the advertisement (24) on the physical display device (26). At some time later the client sends a user response (30). This time the user response (30) is directed to another server (50) which responds with an additional advertising display (52) which through placer (54) is placed on the physical display device (26) to user (10) positionally referenced to the initial display (24).

Figure 11 depicts an alternative embodiment of the invention utilizing multiple servers where the user (10) accesses their client (12) which sends a request for material (14) to a content provider (16). Upon receiving the request for material (14) the content provider

(16) sends back material (18) which includes a request for advertising(20). The advertising server (22) receives the request for advertising (20) and sends an initial advertisement (24) to the user's client (12). The user's client then places the material (18) and the advertisement (24) on the physical display device (26) where it can be seen by the user (10). A locator (28) locates the placement of the advertisement (24) on the physical display device (26). At some time later the client sends a user response (30). When the advertising server receives the user response (30) a new advertisement (32) is selected by the advertising server, a placer(34) then receives the new advertisement(32) and places it positionally referenced on the user's display (26) based on the location provided by the locator(28). The next user response (60) is directed to another server (62) which responds by replacing the material (18) with the new material (64) present on server (62).

Through these embodiments, the user may be voluntarily connecting to servers in any sequence, and in particular accessing content servers to access material provided by them. In the preferred embodiment these are executed by the content server serving an HTML page that contains a reference to an Applet located on a different server. This Applet will then be downloaded and executed and may perform functions such as making an advertising display to the user as herein described. Upon completion of its purpose, the Applet may expire, at which point execution of the browser function continues from the current HTML page on the content Sever. Alternately, the Applet may cause Java code or material to be downloaded from an alternate server, such that the browser is now primarily interconnected to the alternate server which may be a Search server, advertising server or content server.

As a preferred embodiment, this may be implemented by an Applet or other Java code that executes in a browser, accessing the new server and causing executable software to be downloaded and executed at which point the browser is connected to the new server.

The invention provides that a particular case of transfer to an alternate server is transfer to a search server.

During and after download and display of material to a user, the user's explicit or implicit responses or alternately the lack thereof may be used to form an inference as to some element of user interest or preference. The user may then be transferred to a search engine on

a server providing this function. The invention further provides that initial access to the search engine be made including supplying a search string preformatted for the search engine, where this search string defines an area of interest as prepared for the user in response to the deduced element as above.

As a refinement to this mechanism, the search engine chosen for this search may be chosen from the available choice of search engines, based on its characteristics such as relative power in the search area in question and the applicability of this to user information such as from a user profile. As a further refinement, the search engine may be charged a fee for transferring the user, on the basis that the user has in some measure been pre-screened and may have a better than random probability of using the search engine in a manner advantageous to the search engine. Thus, if there was some reason to deduce that the user has an interest in automobiles, and/or a particular class of automobiles, the search string may be prepared such that the search engine immediately performs a search for that class of automobiles or some similar or related area.

As a preferred embodiment, software executed by a browser or by a server may determine that transfer to a search engine is appropriate and also what the search criteria should be, being based on user profile and other data optionally together also with information from recent and/or current user actions. The software may also select which search engine to access, based on similar information, the user history of usage of search engines if known, and also the relative attraction of the commercial arrangements with available search engines. The search string is then prepared in the appropriate format, and typically Java code executing in the browser causes the client to access the search engine with a predefined search.

The invention provides that a particular case of transfer to an alternate server is transfer to a commerce server.

During and after download and display of material to a user, particularly if this has an advertising or other commercial component or implication, the user's explicit or implicit responses or the alternately the lack thereof may be used to form an inference as to some element of user interest. The user may then be transferred to a commerce server covering the

inferred area of interest. As a refinement to this mechanism, a particular commerce server may be selected based on its characteristics such as its relative focus or specialization in an area best suited to the user based on information such as from a user profile. As a further refinement, the commerce server may be charged a fee for the transfer of the user, and also charged a further fee or commission if a commercial transaction results.

Thus, if there was some reason to deduce that the user has an interest in books, transfer may be made to a commerce server setup to sell books. If available information about the user indicates the possibility of such special interest, the user might be transferred to a commerce server specializing in antiquarian books, rather than to a server of more general application.

The present invention may also provide security mechanisms whereby the integrity of the invented scheme may be maintained. This is accomplished by adding a security check whereby the security check insures the user has authorization to receive advertising displays from said display set before any display from that display set is sent.

In the preferred embodiment, the identity of the server making the initial HTML-based Applet reference may be checked for validity. This is accomplished by an executing Applet requesting from its browser the identity of the source of the current HTML page, and then checking this or passing it on to any server such as within a transferred Java Property List or other known means. By comparison with stored information, the Applet or Java code may make a determination of whether the HTML server is an approved source for Applet references that can initiate the invention's sequence of material and code downloads and displays, or whether the HTML server was not so authorized.

Any server provided with this information may both block the transfer of information to the requesting browser, and also may indicate an error condition, if the initial server is unauthorized to invoke the initial Applet or the current server's now requested Applet or Java code. This is particularly useful where one or more servers are set up to download one or more sequences of Applets and Java code to present advertising sets on a user's physical display device. It may be arranged that a number of separate servers provide the originating Applet references that initiate advertising display sequences. Where the origination of such

advertising display sequences is to be limited to certain servers, the means herein described will trap action by unauthorized servers. Similarly, where there exist multiple advertising sets with limitations on which originating server may initiate which set, the same mechanism may ensure that each originating server may only initiate sets for which is approved.

As a preferred embodiment, this element of the invention may be implemented by an executing Applet or other Java code determining from its browser by known means the identity of the HTML server that initiated its execution, and then either making a direct determination of whether such initiation is valid or authorized, or communicating said identity information by known means to the server from which the Applet or Java code was downloaded to make a similar determination, to be followed by a decision such as to continue execution normally or to respond to the inferred error condition.

The invention provides that the advertising displays as described above may be presented in schemes, patterns and/or sequences determined by the designator that may engage user interest, and may induce explicit or implicit user responses which trigger the presentation of additional advertising displays and from which really or potentially useful information may be inferred and used. The type of those uses responses is varied and can depend on the method the designator is using to select additional advertising displays.

Advertising displays within an advertising set may be presented by the designator serially such as in a sequence, with the length of each presentation being determined by time, or alternately with the presentation time for each display being linked to the completion of a visual, audio or audiovisual event, or optionally with a new advertising display being initiated by user action assenting to the presentation of another advertising display. The user may be given the option to make a response to the current advertising display at any time, such as to indicate that the advertising display or its material content is of interest. Such set of advertising displays may be of fixed length, such that after the final display, the sequence is terminated by the designator. Alternately, a set of advertising displays may be repeated once its end has been reached, potentially indefinitely. Or, when one set of advertising displays is completed, a new and different set may be selected by the designator and executed, repeatedly as necessary. Thus the designator could effectively designate a display sequence of essentially indefinite length such that its length is in practice never exhausted.

An advertising set may be presented in parallel, such as in multiple small visual windows on a display screen. Such multiple display windows may advantageously be presented in some neat, impressive, professional or other useful format, such as in a matrix or overall pattern, such as continuously tiled together. The user may highlight or otherwise indicate an advertising display of potential interest, such as by mouse movement or by keyboard actions such as the use of the arrow keys. Or, the individual advertising displays within the set may be automatically highlighted in some visual distinguishing means such as in sequence, to indicate when each is a current potential choice made available to the user for selection. When the user has identified a particular advertising display of interest, this may be selected such as by some keyboard or mouse action.

The multiple advertising displays described above may optionally be accompanied by visual or audio instructions to the user, such as describing the meaning of the advertising displays, how they should be interpreted, how they may be studied further or for a longer time, how user interest in one or more of the advertising displays may be indicated, and how a request for more information may be entered. user interest may be inferred from a variety of indications, including responding with a specific keyboard or mouse action, either by explicitly selecting an advertising display from a presented choice or by performing some act when a particular advertising display is presented alone or is highlighted from a set of advertising displays presented in parallel.

The nature of any such advertising set may be defined by a variety of means or combinations thereof, including being embedded in Java code that executes on a browser, or in a stored form such as in a database optionally stored on a server. Such sequences or sets of displays may be statically defined optionally in stored form, or may be adaptively changed or dynamically defined in response to user information or user actions. In addition to the various types of user responses available, the user's choice of response and action or inaction of response can also be recorded for later use, or can result in criteria used by the designator in selecting additional advertising displays.

The fact that a particular display sequence has been presented to a particular user may be stored, such that it is never presented subsequently. Alternately, if a display sequence is terminated while incomplete for any reason, this fact may be stored or otherwise remembered

such that in future the display sequence may restarted from the same point or immediately thereafter.

The identity, or some attribute or attributes, of a user-selected advertising display or its material content may be used to infer some level of user interest in therein. This information may be added to the user profile or other consolidated or stored information about the user, and/or it may be stored on the user's client. This information may then be used for one or more purposes. The information may be used to select, or assist in the selection of, advertising displays subsequently made to the user, either as one or more discrete displays within a chosen advertising set, or as one or more advertising sets.

The information may also be used for user targeting. Inferred user information may be used to select, or assist in the selection of, advertising material that might be of interest to the user. Alternately, the user may be connected with an advertising server that has material of potential interest to the user, and/or with an advertising server that is given the inferred information about the user such that material of probable preferential interest may be downloaded for display. Alternately, the inferred information may be used to initiate a potential commercial transaction, optionally by connection with a commerce server, where the information may be used to preferentially select, or assist in the selection of, a potential commercial transaction having a better than random probability of being of interest to the user.

As a preferred embodiment, this aspect of the invention may be implemented by Java code executing in a browser and presenting multiple advertising displays serially or in parallel, taking material together with sequence and/or pattern information from its own code and/or downloaded from a server in any combination, with the code interacting with the user to optionally assist in presenting options and then accepting a user selection of some display or element thereof, with the code executing in the browser in some combination with code executing in the server making inferences as to user interest and preferences, optionally storing this information on the server or on the Web client, and then one or more servers using this information to select material of deduced preferential interest to the user such as for an advertising or commerce purpose.

When advertising displays are presented to a user, it may be desirable to use multiple available processes to provoke user interest and enhance the probability of achieving a desired or useful result or user response to said presented material. As described above, one such process is to present a succession of related displays, such as with the modulation of display size and positioning. Such a desirable user response may include but is not limited to reading, listening to or studying presented material, remembering same, forming a favorable disposition to the material content, and/or optionally taking explicit or implicit follow-up actions. The present invention provides that such user responses may be detected and recorded, to trigger additional advertising displays, and optionally for future use, including predicting the user's response to material presented in future.

The present invention also provides that an advertising display may be targeted, such that it appeals to the user better than randomly selected material, and thus has an increased chance of achieving interest and producing a desired result. This may be done in the initial selection of advertising set and advertising display and/or by the designator for the selection of additional advertising displays. User targeting aims to determine preferentially attractive material to present to a user, based on available information, inferences and assumptions about the user together with knowledge and assumptions about the suitability and/or attractiveness of the available material if presented to each user or user class.

To achieve this, the invention provides that information about the user be assembled, as is also information about the material available for download, and that algorithms be used to match any user with an advertising display. Available information about users may be, collected as user profiles, containing available information such as including sex, age group, demographics, years of education, profession, salary level, purchase records, etc. Such profiles may also contain information as to the user's browser type, the operating system and applications software installed by the user, and previous network activity. Such information may be conveniently organized as a data array or structure or vector, and may be so stored for each user, or a user may be assigned to a class. Information on the potential applicability of advertising displays may be similarly organized as an array, structure or vector where each element is, for example, a measure of that element's level of match to the equivalent user vector element. Thus, by example, certain material may be strongly oriented to a particular user sex, while other material may be strongly favored by users in certain geographic regions.

A server having a range of material to be downloaded to users in numerous advertising displays may conveniently embody, or have access to, a database containing information about the applicability of downloadable material to user characteristics. The invention provides that targeting Algorithms may be used to compare the user profile with available material profiles, to calculate a 'goodness of match' score for each potential match, to thereby determine the preferred match on some basis and optionally to use this to select the material for download and display to the user. Such determinations may be made once per advertising set, or may be repetitively applied at different stages by the designator. Additional dynamic factors may also be included, such as the user's explicit response to certain presented questions, choices or options, or the user's implicit responses such as time delays between viewing an advertising display and making a response or taking action, or the measured time of 'mouse hover' in an area of a advertising display of certain presented material.

The range of alternative targeting schemes covered by the present invention utilize mathematical and logical algorithms for inferring user preferences from available data. Such approaches include known algorithms such as the use of neural nets, signal processing such as by Fourier Analysis of patterns of use, fuzzy logic and other probabilstic techniques, correlation matrices and other pattern recognition algorithms, all of which are included in the invention. An alternative targeting approach accesses available information about the user and employs stored rules in combination with random weighted rules, optionally in combination with other rule sets also.

As a preferred embodiment, this element of the invention may be implemented by a server embodying or having access to a database containing user profile and material profile information optionally supplemented with rules encoded as data, together with algorithms for comparing any user profile with some or all material profiles, computing the best match of material for a target user, and optionally selecting the best advertising display and/or set of advertising displays for presentation to the target user.

The invention also provides that the determination of what advertising display should be displayed to users may be assisted by knowledge of the actual effective communication rate between the user's client and a server from which it may receive advertising displays.

This is achieved by measuring the time required to download one or more files or blocks of data of known length then calculating the effective transmission speed. The current time may be obtained to millisecond resolution by making a request of the browser. The effective transmission speed can be calculated by either code running on the client or on the server, and can be normalized into a table to compute a simplified transmission profile of the communication rate. Either the effective transmission rate or any type of simplified transmission profile can be used for transmission profiling of the user.

This simplified transmission profile can be any type of data that provides a simpler way of organizing effective transmission speeds. For example, the simplified transmission profile could be a rating from 1-10 with one being the slowest and 10 being the fastest and where each value from 1-10 corresponds with a prespecified range of effective transmission speeds.

Such bandwidth monitoring or transmission profiling is useful in that a user with faster communications may preferentially benefit from the rich content of relatively large advertising displays, whereas a user experiencing slower communications may be frustrated by long download times and may preferentially benefit from receiving less rich information downloaded in smaller advertising displays.

This aspect of the invention may be integrated with the user targeting scheme described above, in that a user's disposition to endure long download time for richer content, or not, may be used as a valid aspect of the user profile, and also that the actual download communications speed may be included in a calculation of what advertising display should be downloaded in a given target situation.

As a refinement, two or more files of different lengths may be downloaded and calculations performed to deduce by scaled difference the effective communications burst rate and the latency for such file downloads to be initiated. As an alternative refinement, a single request may be made for an identical file twice, or two files of known length, to be downloaded consecutively, where the transition from the first to the second file can be distinguished at the receiving device, and the latency overhead associated with the first file may be distinguished from the transmission time of the second.

As a preferred embodiment, this element of the invention may be implemented by an Applet or other Java code executing in a browser and communicating by a class table or other known means with a server, where said executing code requests that the server download one or more files of known length, and the executing code then measures time before requesting the download and then after it is complete, and by dividing the file size by the time difference can calculate the effective transmission speed and also can calculate the download setup latency time when multiple files are so employed.

As a most preferred embodiment, the files of known length can be the original advertising display or any of the additional advertising displays. The executing code computes the effective transmission speed and then looks up in a table the simplified transmission profile associated with this effective transmission speed. This simplified transmission profile is then sent back to the server so the designator can select additional advertising displays based on the simplified transmission profile.

The invention provides that information, inference and assumption about users' background preferences and predispositions may be collected as a user profile.

Such a user profile may contain specific information about any particular user or may contain information about a class of users, with a particular user being assignable to one or more such classes. Particular types of information may be collected into several smaller profiles, each of which contains a certain area of user information, such that any user may be characterized by a number of smaller profiles which together form the complete user profile.

In the present invention, user profiles are used to assist in determining the information to be displayed to the user. This profile information may be obtained from publicly available information about the particular user, such as from a public database or information supplied to some computer system at some time in the past. Alternately, profile information may be obtained and/or inferred from demographic information, such as knowledge of the user's age, sex, town or zip code of residence, educational level, etc. The user may provide profile information directly, such as by answering a series of direct questions (including where subsequent questions are based or earlier answers) or by answering indirect questions where

profile information is obtained by indirect inference from answers and/or a pattern of answers.

The present invention also provides that additional highly relevant information may be obtained and stored for future use by monitoring the user's response to advertising displays and the options provided therein. Thus, for example, the user's response or lack thereof, or time delay in responding, to a certain class of downloaded material may be used to infer the level of user interest, and a pattern of relative levels of interest to various types of material may then be used to determine what types of material should inferentially be displayed to this particular user for best effect. Similar information may also be inferred from the user's response to surrogate indicators such as other types of material or display schemes, the response to which correlates directly or indirectly with a response to material of interest.

This invention provides that the selection of advertising displays to be presented to users on a commercial basis may be based on user profiles and/or preferences of any type or combination. Thus, for example, an advertiser with the ability to present advertising material to a given user may select an advertising display with particular content that will generally appeal to the user better than randomly selected advertising display. As a further level of refinement, as different advertising displays are presented to the user and a response observed or inferred during multiple such advertising displays, further information about user preference may be obtained to adaptively refine the selection of advertising displays to be presented and optionally to refine the user profile. Alternately, several advertisers may have the option to present material to a particular user, and the selection of which advertiser actually displays an advertising display may be based on which advertiser perceives the greatest potential value in presenting material to this particular user.

This provision may conveniently be implemented by two or more advertisers having recorded in one or more databases their levels of interest in particular users, as characterized either individually or in classes with respect to the available advertising sets and advertising displays, optionally with rule based algorithms ready to make automatic selection of which advertising display should be presented when a user becomes available to receive it.

As a further refinement, the current response of any user may be used to make a quasi real-time determination of the user's current preferences and thereby the choice of material to be presented by a particular advertiser in the chosen advertising display may be adjusted or, a change made to a different advertising display.

As a preferred embodiment, this component of the invention may be implemented by algorithms executing in a server, or distributed among more than one server. These algorithms check the profile of a user, individually or as a class member, against information indicating the applicability of the available material from participating advertisers to such profiles. They then select the material to be downloaded to the user, and optionally use the user's response to modify the sequence of material being downloaded and optionally to also modify the appropriate user or user class profile.

The invention provides that the network may be scanned to provide information about the locations at which users are interconnected. This serves purposes including assisting with user profiling.

In the Preferred Embodiment, this may be achieved by an 'ISP Crawler', which is a software program that scans the Web and stores information about IP Addresses and how these match Internet Service Providers (ISPs). Such a program may optionally be run periodically or repetitively to track changes in ISPs and their IP Address allocations. This information may be stored optionally in a database.

This stored information may be used for purposes such as to derive profile information about a user, when the user is detected according to the present invention. Thus, the user is initially identified by an IP Address allocated to the ISP used. Reference to the information obtained as above may identify the user's ISP, which may provide useful information about the user. Such useful information about the user may include the actual ISP in use, the geographic area in which the ISP and probably the user is located, and any information, inference or assumption about the user or user class that is suspected to preferentially use the subject ISP. This may optionally be added to the appropriate user profile.

In order to implement the method of the invention, it is necessary for the selected advertising set, Initial advertising display, and all additional advertising displays to be designated. Below is the preferred embodiment of a way to designate additional and initial advertising displays and sets. It is through the use of an autonomous agent.

Each such agent may be implemented as a unit of executable software which often represent some real entity and is arranged to perform in some ways analogously to that entity. The algorithmic content of such an agent may be represented by some combination of coded algorithm and relevant data. One useful means for implementing a decision process between alternatives is for each alternative to be represented by an agent, and for all such agents to consider the decision situation and render some mathematical or monetary valuation to winning' the situation and then 'bidding' accordingly. Then, as appropriate the highest or lowest bid initiates the decision. In practice, the same software agent may be used in multiple instances, or implemented as re-entrant code, to represent multiple similar decision possibilities.

Agent technology is used as one embodiment of the present invention for making targeting decisions. Targeting of users is aimed at determining the preferred information to present to the user, based on available information and inferences about the user and knowledge and assumption about the suitability of presentable material to each user or user class. An agent may be used to represent each unit of presentable material, to match this to information about a particular user, and to calculate a 'figure of merit' giving an indication of tile calculated 'goodness of match' of the material to the user. This may be implemented as a family of units of agent software operating together in a parallel or quasi-parallel manner to review all possibilities effectively simultaneously, or as a single such software unit sequentially reviewing each possibility serially. In either case, the best scoring possibility may be awarded the decision, and represents the choice of material to be presented to the user.

As a most preferred embodiment, this element of the invention may be implemented by software executing in a Web server which reviews all combinations of user information, optionally organized as profiles, with information relating the applicability of available material to users, scoring each possible combination on a 'goodness of match' or 'figure of

merit' basis, using each such parameter or combination of parameters as a 'bid' representing the value ascribed to that match, and then accepts the highest, or if appropriate lowest, such bid to select which material is best suited to the user in question.

The present invention applies agents to automated advertising decisions. When an advertising server has a range of available advertising sets and advertising displays to be presented to a user, it is advantageous to optimally match the contained material to available information about the user. Relevant user information includes not only demographic and other background material, but for advertising purposes may include also known buying habits, predisposition to purchase given types of products from an advertising stimulus and particularly following an Internet advertising stimulus, the cash value of purchases made following such advertising stimuli, and any other information which may contribute to the valuation of the user as a prospect for certain types of advertising material. Relevant information about available advertising material may include its known or assumed level of influence on categories of advertising prospects, the level of financial commitment required to make a purchase, and other factors. Agents may be used to make the decision as to which advertising material is presented to which user, by calculating a 'goodness of match' score for each possibility, and by selecting the presented advertising display accordingly.

As a preferred embodiment, this element of the invention may be implemented by software executing in a server and representing an advertiser that wishes to match a user with an advertising display most likely to be effective with that user. Part of this software acts as auctioneer 'offering' the user to agents which are other software entities that each represent an advertising display. The auctioneer identifies the user to the agents, who have access to information about the user and also about the potential match or applicability of particular material to users. Each agent calculates a 'goodness of Match' between the user and the advertising display it represents, and registers its bid accordingly. The auctioneer receives all such bids and determines which has the highest value within the context, This decision may then be used to select the advertising display to be presented to the user.

The invention provides that advertising agents may be used when an advertising server, or more than one server acting cooperatively, has advertising displays available from more than one advertiser, and it is desired to match a user to the advertiser having the best

matched and potentially most effective such advertising display. In this case one or more agents may be used to represent each advertiser and determine the optimum advertising display to present to that user.

Thus, agents for each advertiser may calculate matches between a user and their represented advertising displays and thereby register a bid for that user, and the agent with the winning bid will be awarded the right to present material to that user. Where an advertiser has a selection of materials applicable to a user, agent software representing the advertiser may either 'internally' select its best match which alone is passed on to the main bid selection process, or it may forward all such bids for 'external' selection by auctioneer software, or some intermediate situation may be employed.

In a commercial context, each advertiser may be charged a fee for presenting and advertising display to a user, and each advertiser's bid may optionally be presented in a numeric manner representing the fee or commission that will be paid if selected. Therefore, the invention provides that each user will be presented with material from the selected advertiser with highest calculated match of available material. It also provides that the highest revenues are obtained from participating advertisers able and willing to present material to the user.

As a refinement, advertisers may present their bids for a given user not simply as a single parameter but instead as two or more parameters, representing different aspects of the goodness of match or potential value, where for example the first parameter may represent the commission or fee payable for presenting initial advertising material to the user and the second may be an additional fee for making a second presentation following a user 'click thru'. Software that reviews these bids may, for example, then select the largest initial fee or the largest combination of fees, or other criteria. This software may track advertisers' histories of e.g. successfully achieving a user 'click through' and thus may adaptively decide for each advertiser what the probability is of achieving the second fee and may review each bid accordingly.

As a further refinement, the software may optionally modify or supplement the bidding process, for example by announcing the winning bid and then inviting each advertiser

to submit a revised bid based on an optional recalculation including the initial winning bid as an additional parameter. and then making an actual selection from the revised or subsequent bids. The software representing each advertiser may modify its bids for any other reason. such that it is winning too many or too few bid selections, or that the valuations of the various elements of a multi-parameter bid should be changed for any reason. Furthermore, the bidding process may be extended to also cover commerce servers or other software embodiments representing entities wishing to directly attempt a commercial transaction, such as an immediate sale to the user.

As a preferred embodiment, this element of the invention may be implemented by software executing in a server representing several advertisers that wish to match a user with an advertising display most likely to be effective with that user. Part of this software serves as auctioneer 'offering' the user to software agents that each represent an advertiser with material available to be presented to users. The auctioneer identifies the user to the advertisers' agents, that have access to information about the user and also about the potential match or applicability of their material to users. Each agent calculates a 'goodness of match' between the user and the material it represents, and registers its bid accordingly, optionally forwarding either its internal best match as its sole bid or forwarding all possible matches scaled as bids. The auctioneer receives all such bids and determines which has the highest value within the context. This decision may then be used to select the advertiser given access to the user, and, directly or indirectly, the winning the advertising display to be presented to the user.

The invention also provides that software agents may be used to select which commerce server or other representation of a commercial entity may be selected to attempt a commercial transaction with a particular user.

Similarly to the mechanisms described above, software may be employed to match information about a user with information and/or assumption about the potential of achieving one or more commercial transactions with the user or types of users. When a user is identified, representatives of the commercial entities may bid on the right to attempt a commercial transaction with the user.

Such bidding may be conducted from various viewpoints. One possibility is for each representative to bid on the same product or service, with the bid representing perhaps simply the price offered, or a mixture of price, service and other factors. Alternate bidding schemes may include a situation where each representative may offer it different product or service or combination thereof, depending on their different calculations of which is best suited to the user. More sophisticated schemes may provide the ability to test market one or more products by offering candidate products to a selected range of users to gain information about their response to the range of products.

As a preferred embodiment, this element of the invention may be implemented by software agents. A set of such agents representing several commercial entities may operate in one or several closely coupled computers, such as a commerce server. Alternately, several distinct commerce servers, or computers providing this function, may operate essentially independently but with the ability to communicate and share user information and compare bids, to determine which commercial entity should have access to a given user.

The present invention provides that a wide variety of information about system traffic and performance may be recorded and used for technical and commercial purposes. Thus, a complete record may be made of every single utilization of a system using the invention, including each display of material presented to each user and the complete audit trail of how usage of the system was originated and sequenced. From this may be inferred profile information about each user including. particularly, how the profile is changing with time and cumulative use of the system, and what predictive inferences may be drawn from this. In addition, a complete record is obtained of each discretely different display presented to each user, and this can be sorted in various useful ways.

Thus, if commercial organizations are using the system to present advertising displays to users, they may be billed for the number of advertising displays presented over a given time, optionally with each advertising display individually valued as described above. Furthermore, the response that each user affords to each material display, and/or the extent to which a follow-up action occurs (e.g. a 'click-through' or purchase transaction), may be provided to participating organizations, optionally sorted by user class, to provide each such

organization with an individual report on the effectiveness of the various materials that the organization has presented to various users.

The invention also provides that when a given user is identified by the system, either individually or by profile or by class, different organizations are provided with this information and provided with the opportunity to bid on the possibility of contacting the user with the highest bidder allowed to contact the user, with this bidding process being conducted by real-time algorithm, and/or by stored parameters indicating interest in users of user classes, or by other means.

As a preferred embodiment, this element of the invention may be implemented by one element of software executing in a Web server that keeps records in real-time, and another element of software that periodically reads and interprets these records and produces reports and billing information.

The examples given above have utilized Java code and Applets as a preferred embodiment of the subject inventions. However, other embodiments are possible. Examples of such other embodiments include use of ActiveX coding, explicit coding of the features of the subject invention in another computer language such as C or C++, implementation as scripts using a scripting interpreter, and other implementations known to those of skill in the art. The subject invention may be advantageously practiced with the user operating a personal computer (PC) with client software. Such personal computer may be based on an Intel/IBM architecture, or may be based on an Apple/MacIntosh architecture, or may be a UNIX based device as well as others. Other possible embodiments, include the use of a Personal Digital Assistant (PDA) and also implementation of the invention with Web TV.

All such alternate embodiments are included in the invention, herein described. The browser software may be Microsoft's Internet Explorer, Netscape's Navigator, or an ActiveX enabled browser, or any other commercial or custom designed browser.

The invention particularly applies to situations where it is advantageous to provide a rich user interface containing an abundance of presentable content, both to optimize efficiency by maximizing the quantity and/or quality of information to be presented to the user and also to maximize effectiveness by capturing and holding the user's interest such that

a useful result occurs. Such information is preferably presented in visual graphic or audiovisual format, preferably with each display meriting attention and interest, with a series of displays progressively imparting useful information. Such series may be constructed advantageously where the set of displays is linked, or where a particular display or sequence of displays is selected based on the user's response to one or more earlier displays. This series of displays may be particularly advantageously oriented towards some commercial purpose or intended result.

The present invention particularly applies to Internet based advertising and commerce, where it is advantageous both to capture a user's interest in presented material, and also to tailor the presented material to the user's background and interests, then to proceed to a commercially useful result such as real or increased user interest in the material presented or the initiation or consummation of a commercial transaction. The invention is particularly applicable to situations where Internet based advertising or commerce will benefit from the effective and/or efficient presentation of material, from knowledge of the target user, from algorithms to match real and inferred user preferences to the applicability of such material and the ability to benefit from information about the data communication link to the Internet user.

The following exhibits provide for specific computer code that can be used to execute the current invention. These exhibits are intended to be illustrative and should not be taken to limit the claims in any way.

Exhibit 1: HTML Page to Invoke a Java Applet from Another Web Server.

Exhibit 1 provides an illustrative example of how HTML code downloaded from a Web server and being interpreted by a Web browser is used to cause the browser to download and execute a Java Applet from the same or a different Web server. The execution of the code is as follows. If the browser is Java-enabled, an attempt is made to access a defined Java Applet (in this example named Appletl.class from a defined server (in this example with URL address www.9thsquare.com). The Applet is loaded and commences execution, otherwise an image file is served.

Exhibit 2: Java Applet Code to Expand an Existing Web Browser Window.

Exhibit 2 provides an illustrative example of the locator and how Java code executing on a Java-enabled browser may determine the position of its screen window, as this was inherited from the previously interpreted HTML code that had set up the window and had initiated execution of the subject Java code. Execution of the procedure (action' causes the current top left screen coordinates of the inherited window to be made available as 'loc.x' and 'loc.y'. Once the inherited window or banner has been thus located, subsequent display windows can be positioned in relation to this by appropriate calculation of display coordinates.

Exhibit 3: Java Code to Sequence Applets Per Data Supplied by a Web Server.

Exhibit 3 provides an illustrative example of how Java code executing on a Web browser may initiate a sequence of subsequent Java Applets or other executable Java code, in accordance with information downloaded from a Web server. The code commences by initiating multithreaded execution. A Property List is then downloaded from the server. The name of the next Applet is then obtained, followed by its window image. The selected next Applet is then obtained and execution is commenced.

Exhibit 4: Java Code to demonstrate Download Rate Transmission Profiling.

Exhibit 4 provides an illustrative example of how Java code executing on a Web browser may determine the effective transmission rate of downloaded data from a Webserver to the browser client. This example utilizes the millisecond clock available to executing Java software. The current time is initially recorded as 't1'. In this example, a file of 6kB in size is then downloaded from the server. On completion of this, the current time is then recorded as 't2'. The actual download time is calculated as 't3 = t2 - t1', which is then used to calculate and report the effective transmission rate.

Exhibit 5: Screenshots Showing a Potential User Display.

Exhibit 5 shows three screenshots of the invention being used on a Web browser. The first of these (5a) shows the screen as it is originally presented to the user with the initial advertising display across the top of the window and the content webpage, a gallery with listings, on the lower portion of the window. The second (5b) shows an additional

advertising display covering the initial advertising display. In this particular exhibit the placement was designed to give the illusion of growth. In this screenshot, the content is still visible under the additional advertising display showing that the user has not left the content webpage. The final screenshot (5c) shows a further additional advertising display this time positionally referenced so as to cover both the previous advertising displays.

Claims

1. A method for displaying material on a network comprising:

a user with a client coupled to said network, said client providing requests for material on said network, containing a physical display device for displaying material, and providing a process for registering a user response;

a content provider having a page responsive to said requests for material, the content provider providing requests for components;

a server having sets responsive to said requests for components, said sets consisting of multiple component displays for display on the physical display device;

a designator to designate an additional component display from a selected set;

a locator to locate the physical placement of an initial component display on said physical display device; and

a placer to display said additional component display on said physical display device positionally referenced to said initial component display, whereby said designator designates and said placer displays said additional component display in response to said user response.

2. A method for displaying advertising on a network comprising:

a user with a client coupled to said network, said client providing requests for material on said network, containing a physical display device for displaying material, and providing a process for registering a user response;

a content provider having a page responsive to said requests for material, the content provider providing requests for advertisement;

an advertising server having advertising sets responsive to said requests for advertisement, said advertising sets consisting of multiple advertising displays for display on the physical display device;

a designator to designate an additional advertising display from a selected advertising set;

a locator to locate the physical placement of an initial advertising display on said physical display device; and

a placer to display said additional advertising display on said physical display device positionally referenced to said initial advertising display, whereby said designator designates and said placer displays said additional advertising display in response to said user response.

3. The method of claim 2 whereby said additional advertising display is positionally referenced so that it covers at least part of a prior advertising display already displayed on said physical display device.

4. The method of claim 3 wherein said additional advertising display completely covers said prior advertising display already displayed on said physical display device.

5. The method of claim 4 wherein said additional advertising display is positionally referenced to give the appearance that said prior advertising display has grown into said modified advertising display.

6. The method of claim 2 wherein said additional advertising display is placed so that said additional advertising display co-exists with all prior displays.

7. The method of claim 6 wherein the placement of said additional advertising display gives the appearance of tiling all said prior displays and said additional advertising display.

8. The method of claim 2 whereby any advertising display displayed on said physical display device is deleted when said additional advertising display is placed.

9. The method of claim 2 wherein said client and said advertising server run different software processes.

10. The method of claim 2 wherein when said designator has designated all advertising displays in said selected advertising set, a reset process occurs.

11. The method of claim 10 wherein said reset process comprises selecting a new advertising set as said selected advertising set.

12. The method of claim 10 wherein said reset process comprises reselecting said selected advertising set as said selected advertising set.

13. The method of claim 10 wherein said reset process comprises stopping said designator and said placer actions.

14. The method of claim 2 wherein said user response comprises a mouse click.

15. The method of claim 2 wherein said user response comprises a keyboard stroke.

16. The method of claim 2 wherein said user response comprises a period of mouse pointer hover.

17. The method of claim 2 wherein said user response comprises the passage of a preset period of time.

18. The method of claim 2 wherein said network comprises the Internet.

19. The method of claim 2 wherein said network comprises the World Wide Web.

20. The method of claim 2 further comprising an advertising agent that utilizes a user profile to select said selected advertising set and said initial advertising display.

21. The method of claim 20 wherein said user profile comprises at least one of the following group of characteristics consisting of sex, age group, demographics, years of education, profession, salary level, and purchase records.

22. The method of claim 20 wherein said user profile comprises said user response to a prior advertising display.

23. The method of claim 20 wherein said user profile comprises the results of an ISP crawler.

24. The method of claim 20 wherein said user profile comprises transmission profiling of the client of the user.

25. The method of claim 20 wherein said advertising agent conducts an advertising auction based on said user profile.

26. The method of claim 2 wherein said designator designates said additional advertising display in an invariant manner.

27. The method of claim 2 wherein said designator designates said additional advertising display based on a user profile.

28. The method of claim 27 wherein said user profile comprises at least one of the following group of characteristics consisting of sex, age group, demographics, years of education, profession, salary level, and purchase records.

29. The method of claim 27 wherein said user profile comprises said user response to a prior advertising display.

30. The method of claim 27 wherein said user profile comprises the results of an ISP crawler.

31. The method of claim 27 wherein said user profile comprises transmission profiling of the client of the user.

32. The method of claim 27 wherein said advertising agent conducts an advertising auction based on said user profile.

33. The method of claim 2 wherein at least one advertising display of said selected advertising set is located on a different server from said advertising server.

34. The method of claim 33 wherein said different server is a commerce server.

35. The method of claim 33 wherein said different server is a search server.

36. The method of claim 35 wherein said advertising server additionally transfers search criteria to said search server.

37. The method of claim 33 wherein said different server is at least one cooperating server.

38. The method of claim 33 additionally comprising a router to select between servers.

39. The method of claim 2 further comprising a security check wherein said security check insures said user has authorization to receive advertising displays from said selected advertising set before advertising displays are sent.

40. The method of claim 2 further comprising a monitoring and billing system.

41. The method of claim 40 wherein said monitoring and billing system charges based on the individual valuation of said initial advertising display or said additional advertising display.

42. The method of claim 40 wherein said monitoring and billing system constitutes an advertising auction.

43. The method of claim 40 wherein said monitoring and billing system constitutes a commerce auction.

44. The method of claim 2 wherein said locator and said placer are part of an Applet.

45. A method for displaying visual material over a computer network comprising:

a user with a client coupled to said network, said client providing requests for material on said network and containing a physical display device for displaying material;

an server device connected to said network;

a current display already presented on said physical display device by said server device;

a succession of additional displays not yet presented on said physical display device; and

a process that locates said current display on said physical display device and places said succession of additional displays on said physical display device in a location based on the position of said current display.

46. A method of sending a set of visual material via a network comprising:

sending a member of the set as original material to a user;

displaying said original material on said user's physical display device;

locating the original material on said physical display device; and

sending additional material to be displayed positionally referenced to said original material on said physical display device.

47. A business method for marketing advertising on the Internet comprising:

having an advertiser purchase an advertising set from a marketer, said marketer then sending a member of the set as original material to a user;

displaying said original material on said user's physical display device;

locating the original material on said physical display device; and

sending additional material to be displayed positionally referenced to said original material on said physical display device.

48. A method for displaying advertising on the Internet comprising:

a user with a browser on a client coupled to the Internet, said client providing requests for material on said network, containing a physical display device for displaying material, and providing a process for registering a user response;

a content provider having a content webpage responsive to said requests for material, the content provider providing requests for advertisement, and having a set space to display advertising displays;

an advertising server having advertising sets responsive to said requests for advertisement, said advertising sets consisting of multiple advertising displays for display on the physical display device;

a designator to designate an additional advertising display from said selected advertising set;

a placer to display said additional advertising display on said physical display device, whereby said designator designates and said placer displays said additional advertising display in response to a user response, and whereby the placing of said additional advertising display does not prevent the user's browser from simultaneously presenting the said webpage.

49. A method for obtaining a transmission profile for a user of a network comprising
sending the user material of known size;
measuring the time it takes for said user to receive said material of known size;
and calculating an effective transmission speed from said time and said material of known size

50. The method of claim 49 further comprising:
sending the user additional material of known size;
measuring the new time it takes for said user to receive said additional material of known size;
and calculating a new effective transmission speed from said time, said new time, said material of known size and said additional material of known size.

51. The method of claim 49 further comprising:
comparing the effective transmission speed with a table of simplified transmission profiles and using the associated simplified transmission profile from said table.

52. The method of claim 49 wherein said material of known size is an advertising display.

53. A method for targeting Information delivery to a user of a network comprising
sending the user material of known size;
measuring the time it takes for said user to receive said material of known size;
calculating an effective transmission speed from said time and said material of known size;
and sending information of a size appropriate based on said effective transmission speed.

54. The method of claim 53 wherein said information of a size appropriate is chosen by reference to a simplified transmission profile.

55. A network comprising:

a user with a client, said client providing requests for material, containing a physical display device for displaying material, and providing a process for registering a user response;

a content provider having a page responsive to said requests for material, the content provider providing requests for advertisement;

an advertising server having advertising sets responsive to said requests for advertisement, said advertising sets consisting of multiple advertising displays for display on the physical display device;

a designator to designate an additional advertising display from a selected advertising set;

a locator to locate the physical placement of an initial advertising display on said physical display device; and

a placer to display said additional advertising display on said physical display device positionally referenced to said initial advertising display, whereby said designator designates and said placer displays said additional advertising display in response to said user response.

56. The network of claim 55 whereby said additional advertising display is positionally referenced so that it covers at least part of a prior advertising display already displayed on said physical display device.

57. The network of claim 55 wherein said additional advertising display is placed so that said additional advertising display co-exists with all prior displays.

58. The network of claim 55 that operates over the World Wide Web.

59. The network of claim 55 further comprising an advertising agent which utilizes a user profile to select said selected advertising set and said initial display.

60. The network of claim 55 wherein said designator designates said additional advertising display based on a user profile.

61. The network of claim 55 wherein at least one advertising display of said selected advertising set is located on a different server from said advertising server.

62. A means for transferring a set of visual material over a network comprising:

means for sending a member of the set as original material to a user;

means for displaying said original material to said user;

means for locating said original material; and

means for sending additional material to be displayed positionally referenced to said original material.

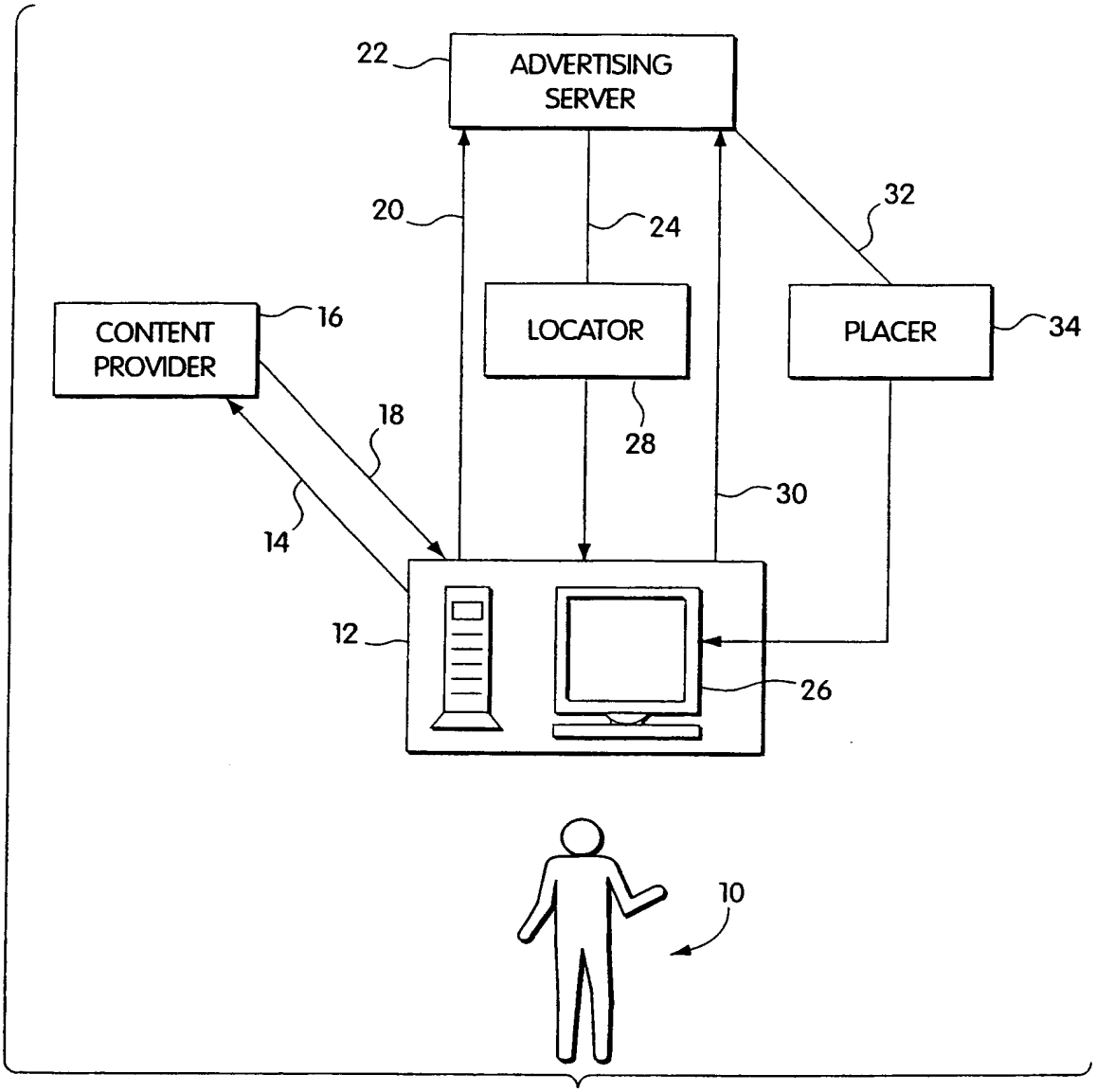


Fig. 1

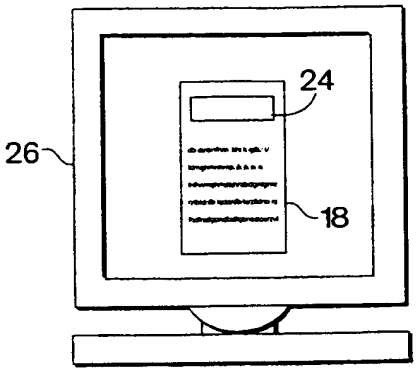


Fig. 2A

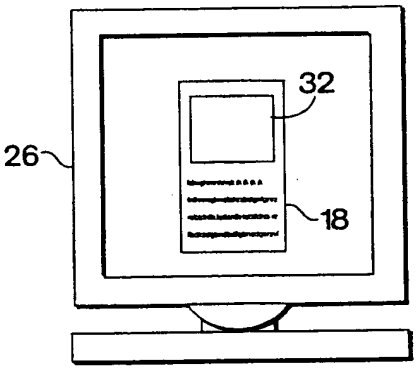


Fig. 2B

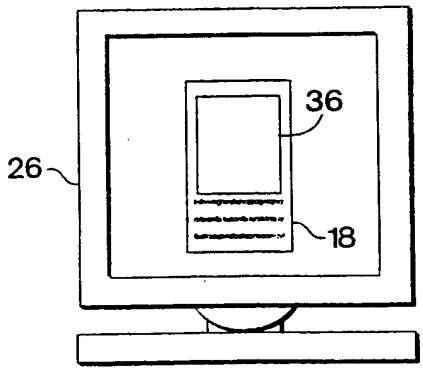


Fig. 2C

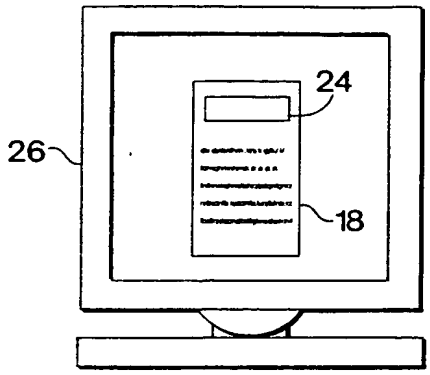


Fig. 3A

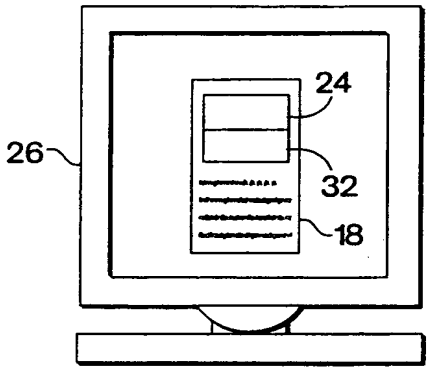


Fig. 3B

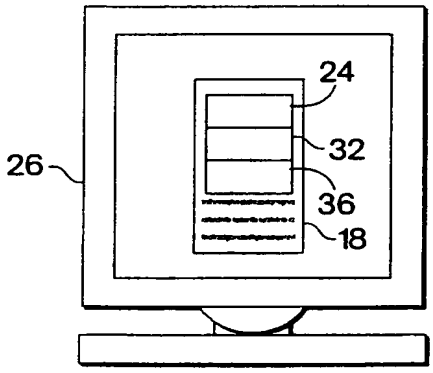


Fig. 3C

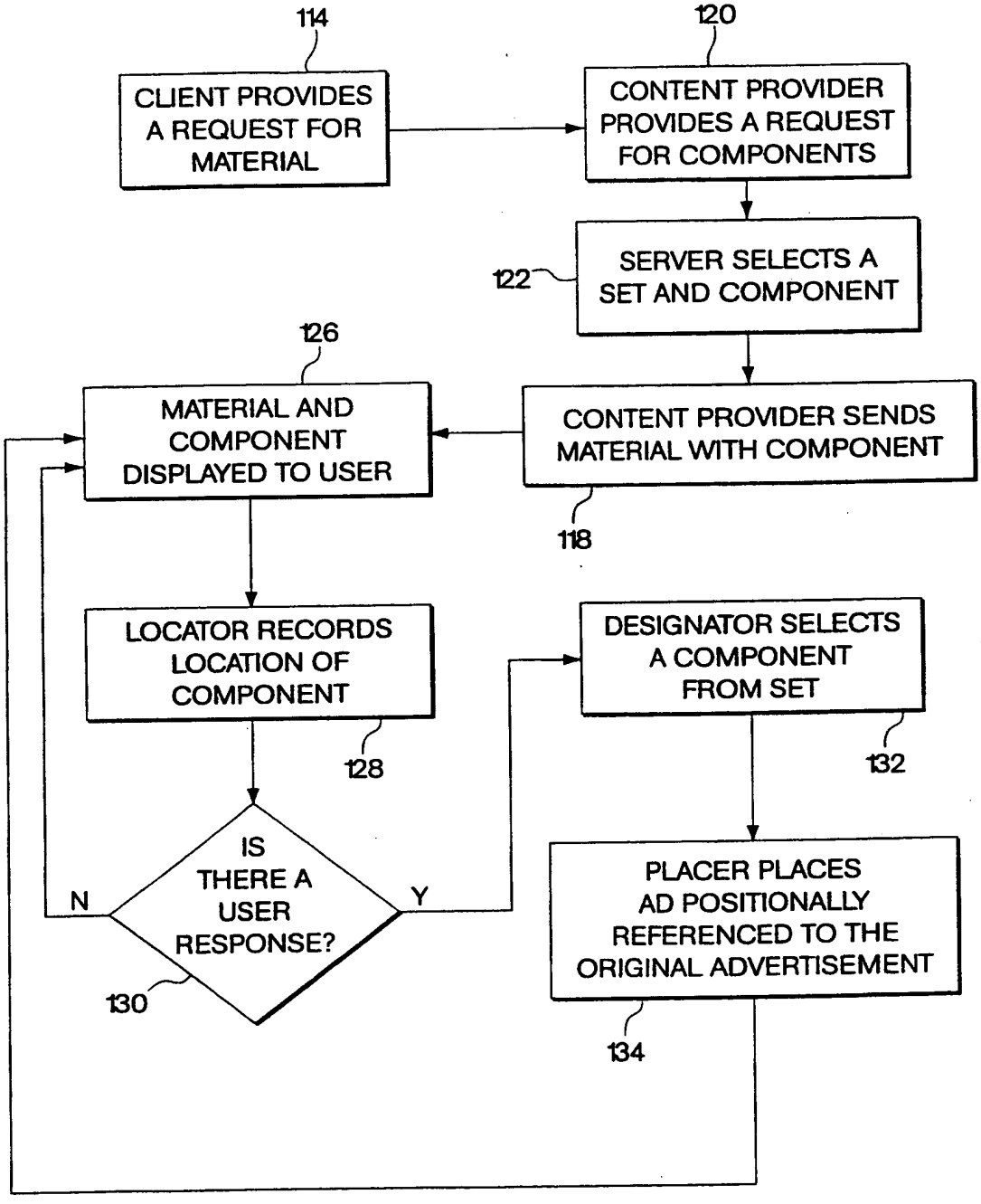


Fig. 4

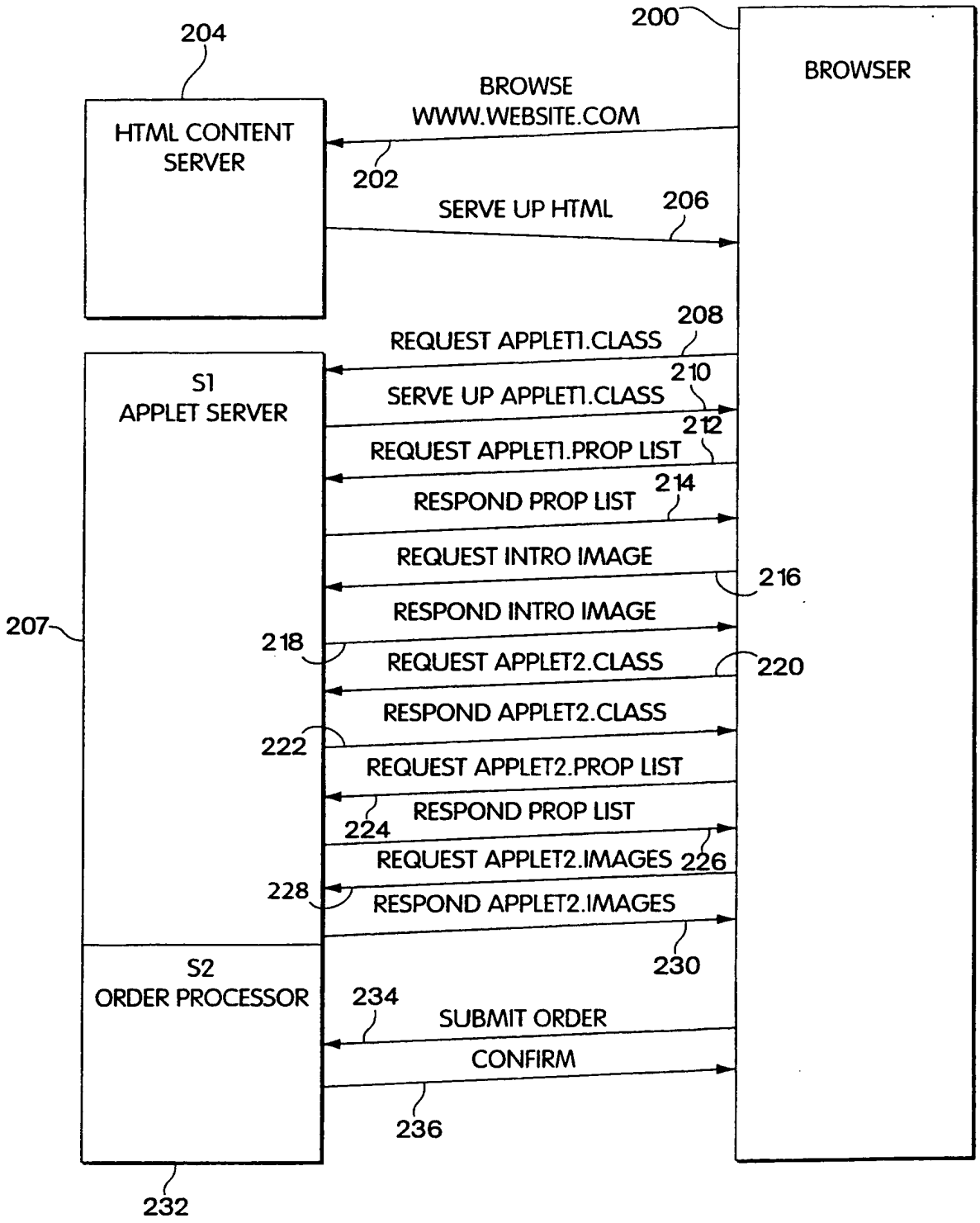


Fig. 5

SUBSTITUTE SHEET (RULE 26)

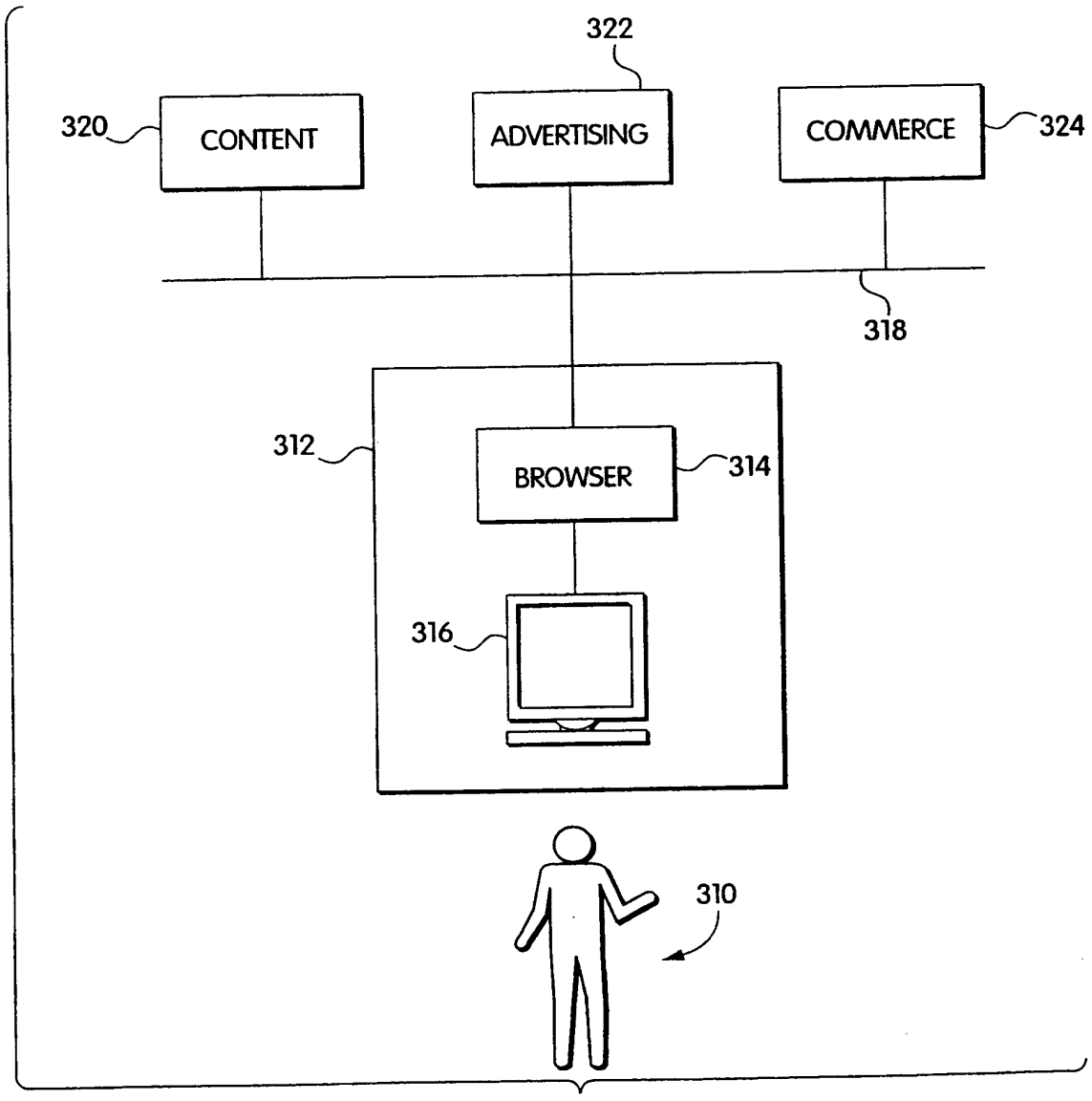


Fig. 6

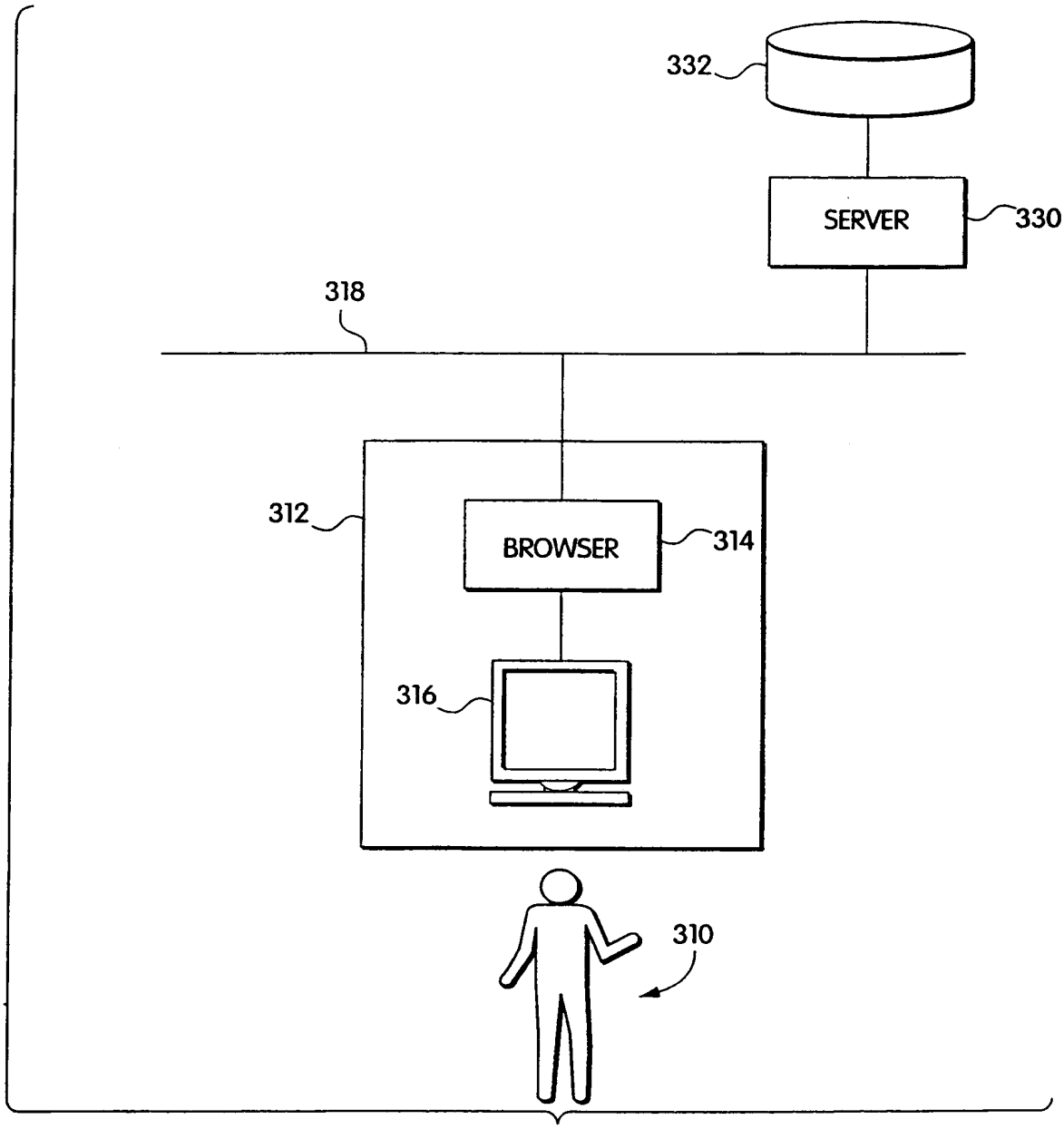


Fig. 7

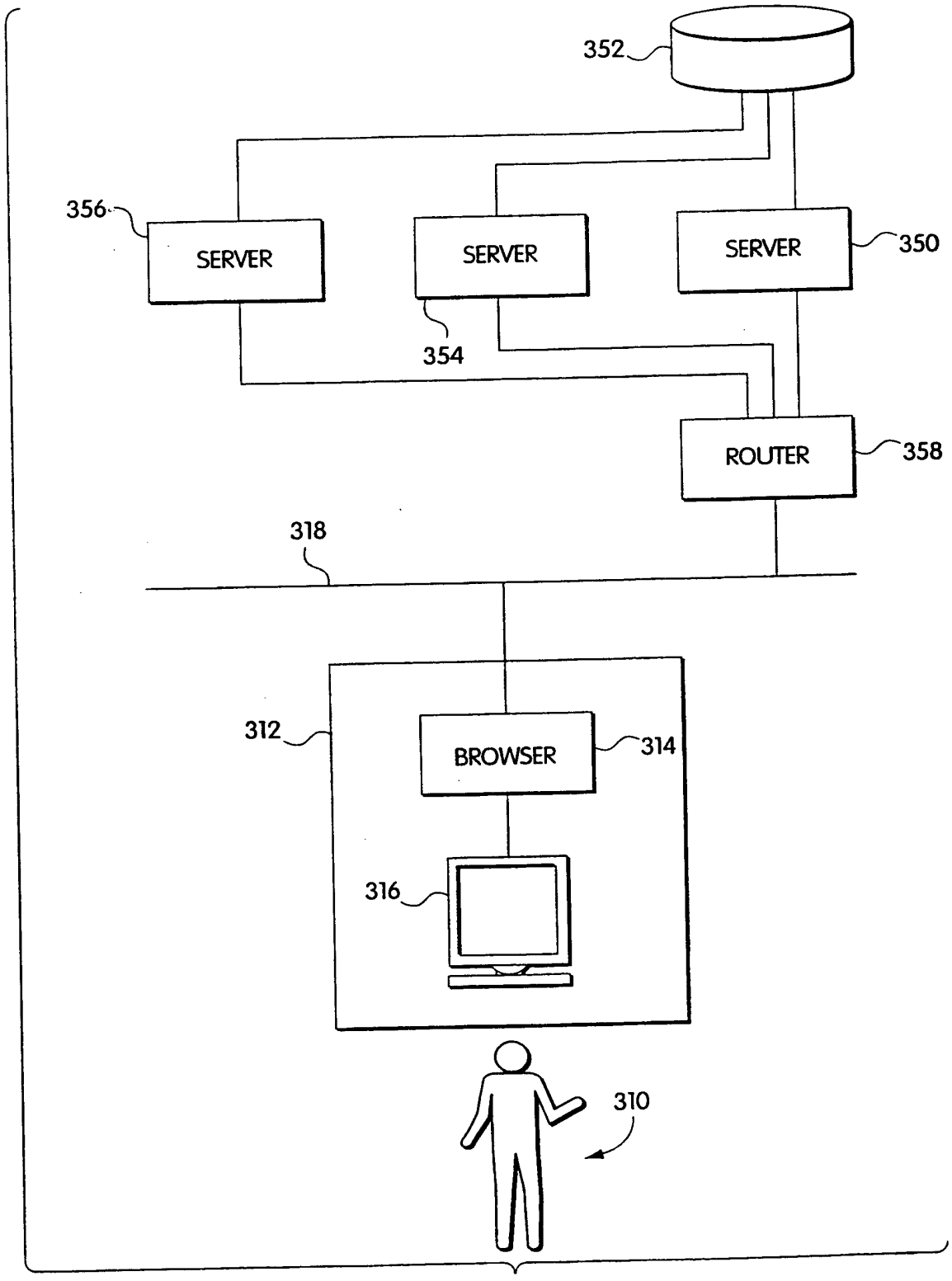


Fig. 8

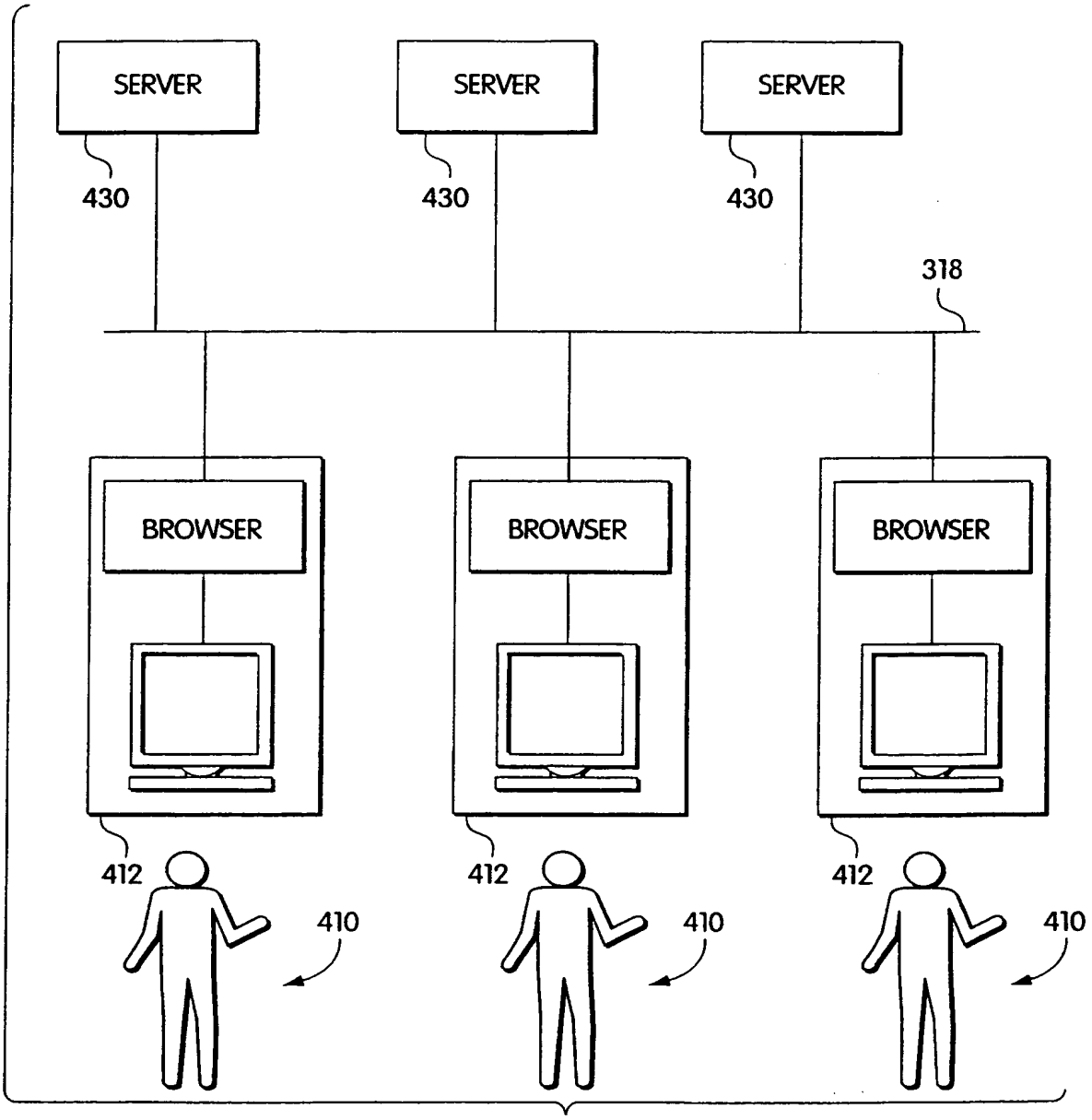


Fig. 9

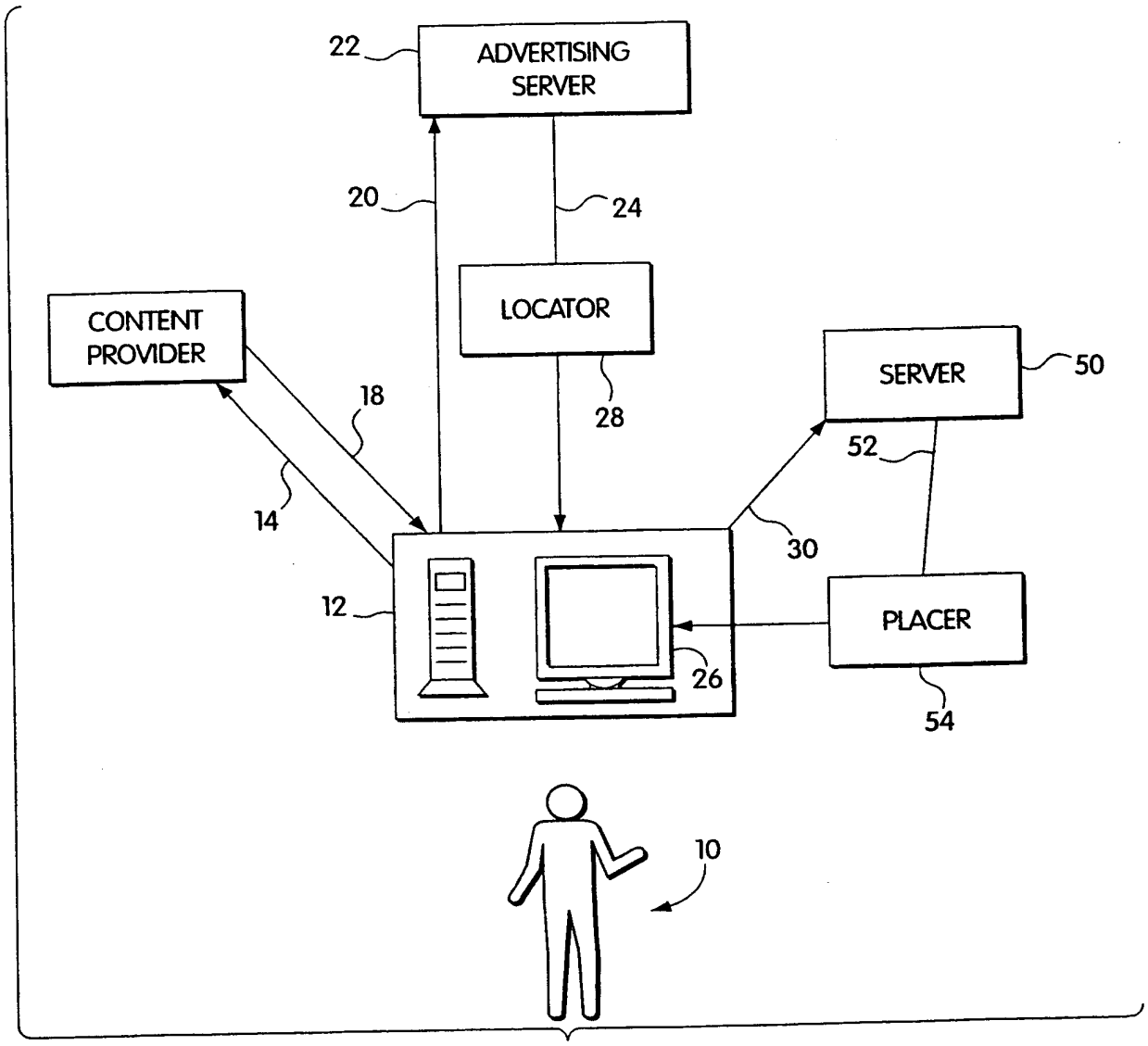


Fig. 10

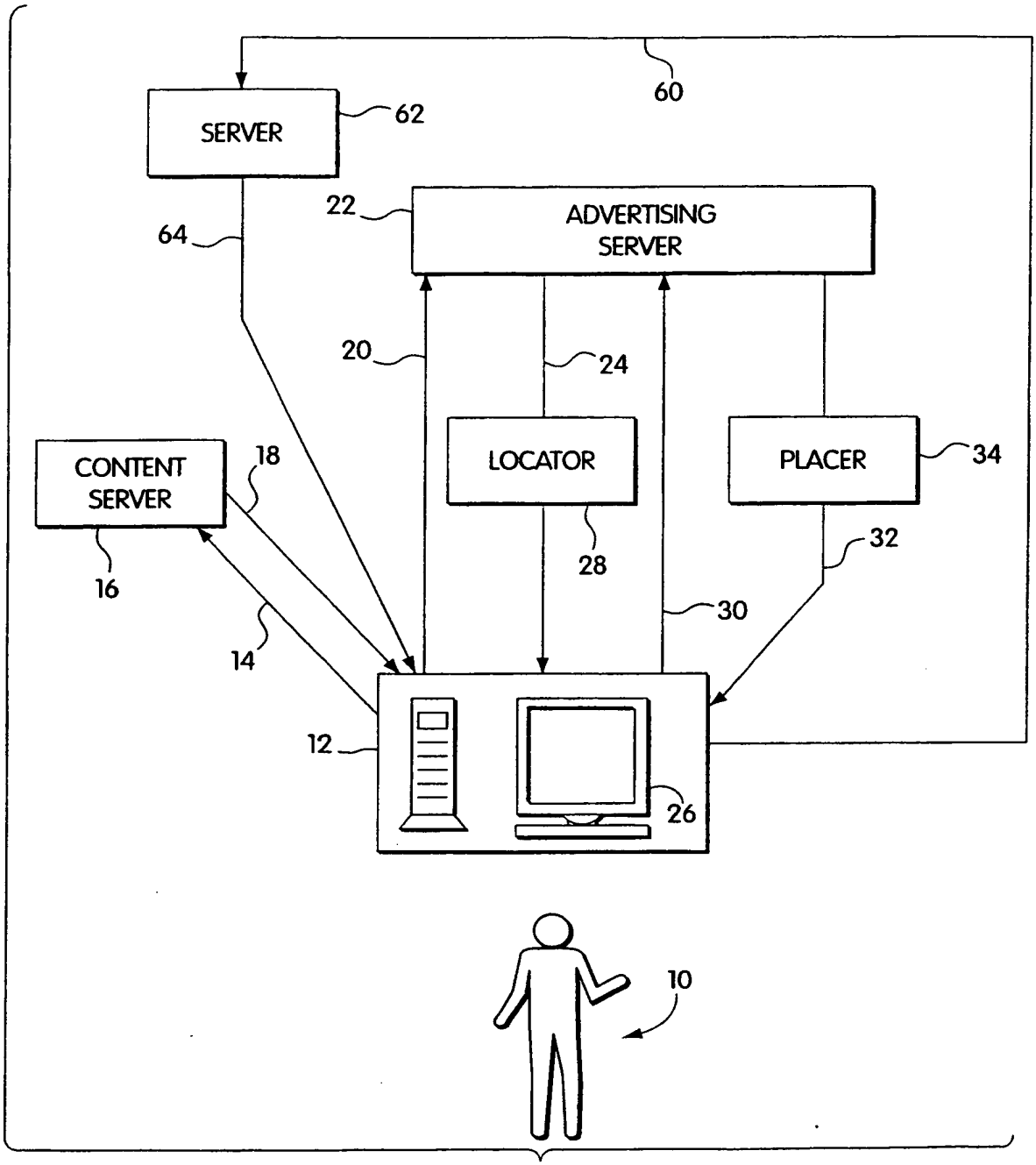


Fig. 11

Exh. 61

Figure 1: HTML Content Page

```
<HTML>
<HEAD>
<TITLE>NYTIMES</TITLE>
</HEAD>
<BODY>
<H1>NYTIMES</H1>
<script language="javascript">
<!--
if (navigator.javaEnabled()) {
    document.write("<applet code=\"Applet1.class\"
codebase=\"http://www.9thsquare.com/pushpin\" width=468 height=60
MAYSCRIPT>")
    document.write("<param name=siteid value=\"1\">")
    document.write("</applet>")
} else {
    document.write("<img src=\"http://www.9thsquare.com
/pushpin/noj.asp?siteid=1\">")
}
//-->
</script>
<BR><BR>
<P>
Have fun!<BR>
</P>
<HR>
</BODY>
</HTML>
```

Exhibit

Figure 2: Expanding Applet Code - Java

```
import java.awt.*;
import java.applet.*;

public class expand extends Applet
{
    Window child;
    Button open;

    public void init()
    {
        //{{INIT_CONTROLS
        setLayout(null);
        setSize(468,60);
        //}}

        open = new Button("Open");
        open.reshape(300, 35, 40, 20);
        add(open);

        child = new Window(new Frame());
        child.resize(468,180);
        child.hide();
    }

    public void stop()
    {
        child.hide();
    }

    public boolean action(Event event, Object obj)
    {
        Object oTarget = event.target;
        if (oTarget == open) {
            Point loc = getLocationOnScreen();
            child.move(loc.x, loc.y);
            child.show();
            return true;
        }
        return false;
    }
    //{{DECLARE_CONTROLS
    //}}
```

Exh. 67

~~Figure~~ 3: Sequencing Applets - Java

```
import java.applet.Applet;
import java.awt.*;
import java.net.*;
import java.io.*;
import java.util.*;

public class sequence extends Applet implements Runnable {

Thread m_t;      /* child applet thread */
long m_tm=0;     /* start time */
boolean m_con;   /* successful connection to server success */
Applet m_app;    /* child applet */

    Image m_im=null;          /* first image */
    boolean m_g = false;      /* child applet good */
    public Hashtable m_props = new Hashtable();     /* properties
*/

    /* when browser starting, create 2nd thread
    */
    public void start()
    {
        if (m_t == null) {
            m_t = new Thread(this);
            m_t.start();
        }
        if (m_g) {
            m_app.start();
        }
    }

    /* when browser stoping, stop 2nd thread
    */
    public void stop()
    {
      if (m_t != null) {
            m_t.stop();
            m_t = null;
      }
        if (m_g) {
            m_app.stop();
        }
    }

    /* this is the start of the 2nd thread
    */
    public void run()
    {
        try {
            /* get the name of the next applet and the intro image
to display
            */
            m_con = getSProps(m_props, "propx15.asp",
"siteid="+getParameter("siteid"));
```

```
                * get the image
                */
                m_im = getImage(getCodeBase(),
(String)m_props.get("image"));
                MediaTracker m=new MediaTracker(this);
                m.addImage(m_im,0);
                try { m.waitForAll(); } catch (Exception e) {};
                repaint();
                m_t.sleep(2000);

                /* get the applet
                */
                m_app =
(Applet)Class.forName((String)m_props.get("applet")).newInstance();
                m_app.setStub(new sequenceb(this));
                setLayout(new BorderLayout());
                add("Center", m_app);
                m_app.init();
                validate();
                m_app.start();

                m_g = true;
            }
            catch (Exception e) {}
        }

        /* paint myself and next applet
        */
        public void paint(Graphics g)
        {
            if (m_im!=null)
                g.drawImage(m_im, 0, 0, 468, 60, null);

            if (m_g)
                m_app.paint(g);
        }

        /* read property list from server
        */
        public boolean getSProps(Hashtable props, String pServer,
String qs)
        {
        boolean ret=false;

            try {
                URLConnection uc = (new URL (getCodeBase(),
pServer)).openConnection();
                uc.setDoInput(true);
                uc.setDoOutput(true);
                uc.setUseCaches(false);
                uc.setRequestProperty("Content-Type", "application/x-
www-form-urlencoded");

                DataOutputStream os = new DataOutputStream
(uc.getOutputStream ());
                os.writeBytes (qs);
                os.flush();
                os.close();
```

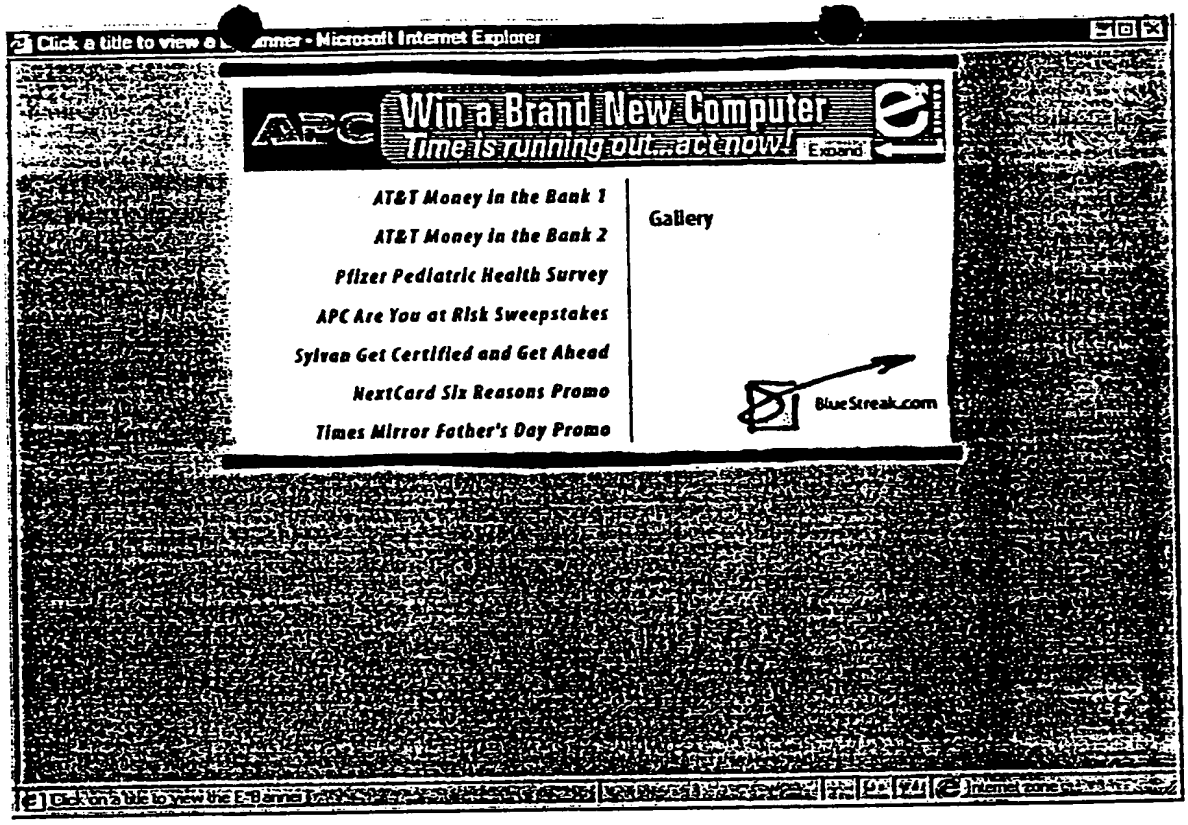
```
                DataInputStream is = new DataInputStream
(uc.getInputStream ());
                int nu = is.available();
                byte[] buf = new byte[nu];
                is.readFully(buf);
                String str = new String(buf);

                int sr=0, cr=0, eq;
                while (true) {
                    cr=str.indexOf((char)10, sr);
                    eq=str.indexOf('=', sr);
                    if (cr>0 && eq>0)
                        props.put(str.substring(sr, eq),
str.substring(eq+1, cr));
                    else
                        break;
                    sr=cr+1;
                }
                is.close ();

                if (props.get("status").equals("1010"))
                    ret = true;
            } catch (Exception e) {}

            return ret;
        }
    }

    // sequenceb appletStub needed for above
    //
    import java.applet.*;
    import java.net.*;

    class sequenceb implements AppletStub {

        sequence m_parent;

        sequenceb(sequence parent)
        {
            m_parent = parent;
        }

        public void appletResize(int w, int h)
        {
            m_parent.resize(w, h);
        }

        public URL getCodeBase()
        {
            return m_parent.getCodeBase();
        }

        public URL getDocumentBase()
        {
            return m_parent.getDocumentBase();
        }
```

```
public boolean isActive()
{
    return m_parent.isActive();
}

public AppletContext getAppletContext()
{
    return m_parent.getAppletContext();
}

public String getParameter(String p)
{
    return m_parent.getParameter(p);
}
```

Exhibit

Figure 4: Transmission Profiling - Java

```
import java.awt.*;
import java.applet.*;

public class profile extends Applet
{
    public void init()
    {
        //{{INIT_CONTROLS
        setLayout(null);
        setSize(426,266);
        //}}

        profile();
    }

    public void profile()
    {
        Image img;
        MediaTracker tracker;
        long t1, t2, t3;

        img = getImage(getCodeBase(), "6k.gif");
        tracker = new MediaTracker(this);
        tracker.addImage(img, 0);

        t1 = System.currentTimeMillis();
        try { tracker.waitForAll(); } catch (Exception e) {}
        t2 = System.currentTimeMillis();
        t3 = t2 - t1;
        System.out.println("kb/sec=" + 1000.0 * 6.0 / (float)t3);
    }

    //{{DECLARE_CONTROLS
    //}}
}
```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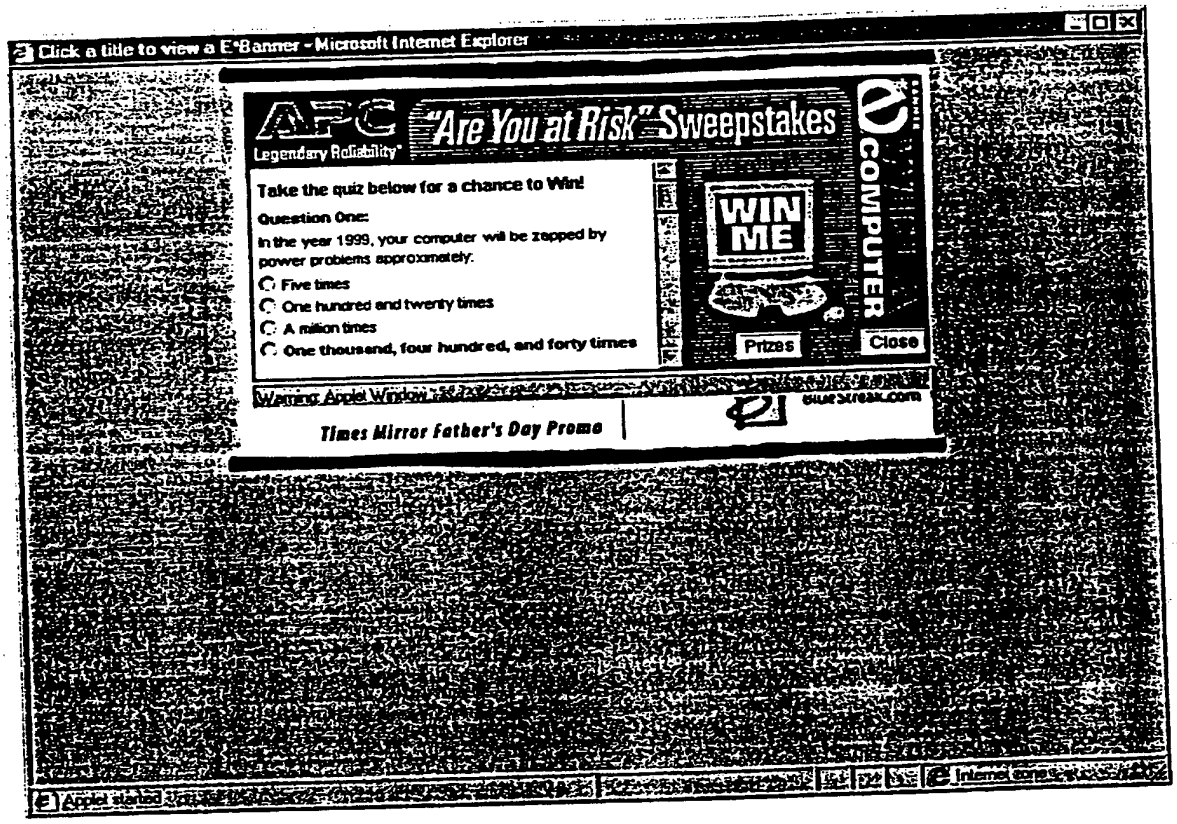
5a

5b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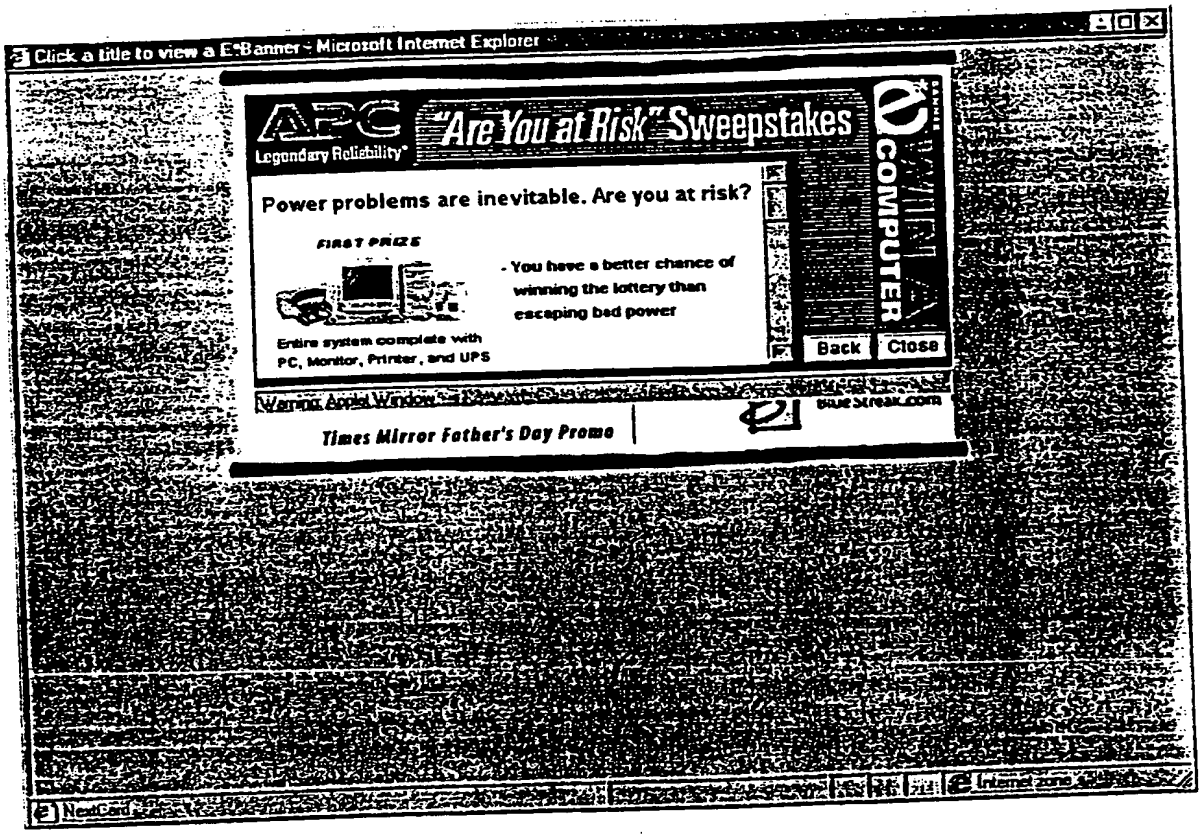
Legendary Reliability
"Are You at Risk" Sweepstakes
COMPUTER
Take the quiz below for a chance to Win!
Question One:
In the year 1999, your computer will be zapped by power problems approximately:
Five times
One hundred and twenty times
A million times
One thousand, four hundred, and forty times
WIN ME
Prizes
Close
Warning: Applet Window
Times Mirror Father's Day Promo
Applet started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APC
Legendary Reliability
"Are You at Risk" Sweepstakes
COMPUTER
Power problems are inevitable. Are you at risk?
FIRST PRIZE
Entire system complete with PC, Monitor, Printer, and UPS
- You have a better chance of winning the lottery than escaping bad power
Back
Close
Warning: Applet Window
Times Mirror Father's Day Promo
BlueStreak.com
Internet zone

5c

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DECLARATION OF NON-ESTABLISHMENT OF INTERNATIONAL SEARCH ~~REPORT~~

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PCT/US 00/ 28409	13/10/2000	13/10/1999
International Patent Classification (IPC) or both national classification and IPC	G06F17/60	
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This International Searching Authority hereby declares, according to Article 17(2)(a), that **no international search report will be established** on the international application for the reasons indicated below

1. ☐ The subject matter of the international application relates to:
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   - b. ☐ mathematical theories
   - c. ☐ plant varieties.
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   - e. ☐ essentially biological processes for the production of plants and animals, other than microbiological processes and the products of such processes.
   - f. ☐ schemes, rules or methods of doing business.
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   - h. ☐ schemes, rules or methods of playing games.
   - i. ☐ methods for treatment of the human body by surgery or therapy.
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